This document gives pertinent information concerning the VPDES Permit reissuance listed below. This permit is being processed as a Major, Municipal permit. The discharge results from the operation of an 11-MGD wastewater treatment plant; the permit also contains a 22-MGD flow tier. This reissuance also includes reclamation and reuse. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

1. Facility Name and Address: Broad Run Water Reclamation Facility
P.O. Box 4000
Leesburg, VA 20146

SIC Code : 4952

Facility Location: 44961 Loudoun Water Way
Ashburn, VA 20146

County: Loudoun

Facility Contact: Robert A. Canham, Jr.

Phone Number: (571)291-7823

2. Permit No.: VA0091383

Expiration Date: March 31, 2010

Other VPDES Permits Associated with this Facility: VAN010017

Other Permits associated with this facility: Air Registration #73268

E2/E3/E4 Status: Not Applicable

3. Owner Contact/Name: Loudoun Water

Owner Contact/Title: Dale Hammes, General Manager

Telephone Number: (571)291-7980

4. Application Complete Date: September 30, 2009

Permit Drafted By: Alison L. Thompson/NRO

Date Drafted: 2/22/2010

Draft Permit Reviewed By: Joan Crowther/NRO

Date Reviewed: 3/2/2010

Public Comment Period : Start Date: 7/7/2010

End Date: 8/6/2010

5. Receiving Waters Information:

Receiving Stream Name :	Broad Run	River Mile:	BRB004.37
Stream Basin:	Potomac River	Subbasin:	Potomac River
Section:	8	Stream Class:	III
Special Standards:	PWS	Waterbody ID:	VAN-A09R/PL19
7Q10 Low Flow:	0.34 MGD	7Q10 High Flow:	3.90 MGD (Dec-May)
1Q10 Low Flow:	0.28 MGD	1Q10 High Flow:	2.69 MGD (Dec-May)
Harmonic Mean Flow:	6.04 MGD	30Q10 High Flow:	6.59 MGD (Dec-May)
303(d) Listed:	Yes	30Q5 Flow:	1.54 MGD
TMDL Approved:	No (due in 2018)	30Q10 Flow:	0.82 MGD

Flow Frequency Determination: See Attachment 1.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation (Federal Register)
- ✓ EPA Guidelines
- ✓ Water Quality Standards
- ✓ Other (Policy for the Dulles Area Watershed - 9VAC25-400)

7. Licensed Operator Requirements: Class I

8. Reliability Class: Class I

9. Permit Characterization:

___ Private	___ Effluent Limited	✓ Possible Interstate Effect
___ Federal	✓ Water Quality Limited	___ Compliance Schedule Required
___ State	✓ Toxics Monitoring Program Required	___ Interim Limits in Permit
✓ POTW	✓ Pretreatment Program Required	___ Interim Limits in Other Document

10. **Wastewater Treatment Description:**
The Broad Run Water Reclamation Facility (WRF) is the first advanced wastewater treatment facility in the Dulles Area Watershed. The facility is designed to meet the stringent effluent discharge limits specified in the Policy for the Dulles Area Watershed as contained in 9VAC25-400. The permit was first issued April 1, 2005 and was modified in 2006 when Loudoun Water had CH2MHill rerate the three flow tiers. The facility began discharging on May 2, 2008. The facility includes primary treatment (grit removal, primary clarifiers, and fine screens), membrane bioreactors for the biological treatment process, chemical addition followed by granular activated carbon (GAC) contactors and ultraviolet (UV) disinfection. The effluent is post aerated before it is discharged to Broad Run. The CTO for the 11 MGD flow was issued on May 26, 2010.

In July 2009, Loudoun Water submitted an application addendum for Reclamation and Reuse. The Administrative Authorization was signed in December 2009. This Administrative Authorization will be incorporated into the VPDES permit with this reissuance.

See Attachment 2 for a process flow diagram.

The discharge location is identified on the attached USGS topographic map – Sterling Quadrangle (Attachment 3).

TABLE 1 - Outfall Description

OUTFALL NUMBER	DISCHARGE SOURCES	TREATMENT	DESIGN FLOW	Outfall Location Latitude and Longitude
001	Domestic and/or Commercial Wastewater	See Item 10 above.	11 MGD with a 22 MGD tier	39°01'50" 77°26'39"

11. **Sludge Treatment and Disposal Methods:**
The Broad Run WRF uses gravity thickening, mesophilic anaerobic digestion, and centrifugation to treat the sludge generated by the wastewater treatment processes. The facility produces Class B sewage sludge at a rate of 3650 dry metric tons per 365-day period.

The dewatered cake is stored and land applied by Synagro Central LLC.

The dewatered cake can also be hauled to the King George County Landfill for final disposal.

See Attachment 2 for a process flow diagram.

12. **Material Storage:**

TABLE 2 - Material Storage

Materials Description	Volume Stored	Spill Prevention Measures
Chemicals stored, quantities, and locations are found in Attachment 4.		

13. Site Inspection:

A full technical inspection was last conducted by Sharon Allen in June 2008; there were no compliance issued raised during the inspection. See Attachment 5 for a copy of the inspection report.

14. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

1aBRB002.15	DEQ's Ambient Water Quality Monitoring Station located on Broad Run at the Route 7 bridge.
VAG836053	Herndon Service Center (VPDES General Permit) discharge to Broad Run.
0.62 miles from outfall	A feeder line to the Potomac Interceptor crosses Broad Run creating a four foot dam.
4.5 miles from outfall	Broad Run confluence with the Potomac River.
10.2 miles from outfall	The Fairfax County Water Authority's Potomac River Intake.

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

The following is excerpted from the Planning Statement for this discharge; the full planning statement is contained in the reissuance file.

Outfall 001 discharges to Broad Run, which is broken into two assessment units from the location of the discharge downstream to the confluence with the Potomac River. Segment VAN-A09R_BRB02A06 begins at the confluence with Cabin Branch, at rivermile 5.35, and continues downstream until the confluence with Beaverdam Run. Segment VAN-A09R_BRB01A00 begins at the confluence with Beaverdam Run, approximately 0.8 rivermile upstream from Route 7, and continues downstream until the confluence with the Potomac River. The 2008 Integrated report notes that both of these segments have the following impairments:

1. Aquatic Life Use:
Two biological monitoring events in 2004 and two biological monitoring events in 2005 at station 1aBRB002.15 each resulted in a VSCI score which indicates an impaired macroinvertebrate community. (VAN-A09R_BRB01A00)

The benthic macroinvertebrate impairment is based on biological monitoring at stations 1aBRB002.15 (two biological monitoring events in 2004 and two in 2005) and 1aBRB006.97 (two biological monitoring events in 2005), along immediate downstream and upstream assessment units, respectively. (VAN-A09R_BRB02A06)

2. Fish Consumption Use:
The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected area includes the following tributaries between the Virginia/Maryland state line near the Route 340 bridge (Loudoun County) to the I-395 bridge in Arlington County (above the Woodrow Wilson Bridge): Goose Creek up to the Dulles Greenway Road Bridge, Broad Run up to the Route 625 bridge, Difficult Run up to the Route 7 bridge, and Pimmit Run up to the Route 309 bridge. Additionally, excursions above the water quality criterion based tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in one specie of fish samples (2 total samples); American eel (2001) and American eel (2004) at monitoring station 1aBRB002.15.

The 2008 Integrated Report also includes the Virginia portions of the Chesapeake Bay and its tributaries as impaired waters not meeting the aquatic life use support goal. The IR indicates that 83% of the mainstem Bay does not support the aquatic life use support goal. Nutrient enrichment is cited as one of the primary causes for the impairment.

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Broad Run is located within Section 8 of the Potomac River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 6 details other water quality criteria applicable to the receiving stream. The criteria were developed for each of the flow tiers.

Ammonia - The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH and effluent quality. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. Ambient water quality data for pH and temperature from 1aBRB002.15 were available from STORET, the effluent pH and temperature data were obtained from the Discharge Monitoring Reports, and all the data are contained in Attachment 7. The ammonia criteria are presented in Attachment 6 are based on this data.

Metals Criteria: The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). The average hardness of the receiving stream is 100 mg/L; this value was derived from the STORET data and is found in the permit reissuance file. The effluent hardness found as part of the application data is 140 mg/L. The hardness-dependent metals criteria shown in Attachment 6 are based on these values.

Bacteria Criteria: The Virginia Water Quality Standards (9VAC25-260-170 A.) states that the following criteria shall apply to protect primary recreational uses in surface waters:

1) *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 ml)	126

[1]For a minimum of four weekly samples [taken during any calendar month].

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables 9VAC25-260-360, 370 and 380 designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Broad Run, is located within Section 8 of the Potomac Basin. This section has been designated a Class III water with a special standard of PWS.

Special Standard PWS designates a public water supply intake. The Board's Water Quality Standards establish numerical standards for specific parameters calculated to protect human health from toxic effects through drinking water and fish consumption.

d) Policy for Sewage Treatment in the Dulles Area Watershed

Chapter 9VAC25-400, Policy for Sewage Treatment in the Dulles Area Watershed, was established to regulate the discharge from sewage treatment plants in the Dulles Area Watershed, which is located upstream of several major public water supply intakes serving the Washington, D.C. metropolitan area. This Policy prescribes the effluent limitations for the sewage treatment works, the design requirements for the sewage treatment plants and pumping stations, and the requirement for an instream monitoring program. The Broad Run WRF discharges to the affected area, so this Policy is applicable to this permit.

e) Threatened and Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on January 28, 2010, for records to determine if there are threatened or endangered species in the vicinity of the discharge. There was one threatened or endangered species identified within a 2 mile radius of the discharge. The species was the Upland Sandpiper. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

16. Antidegradation:

The State Water Control Board's Water Quality Standards adopted in 1992 included an antidegradation policy (9VAC25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the fact that this is an urban stream in a well developed area of Loudoun County and the stream is listed as impaired for the aquatic life use. Permit limits proposed have been established by determining wasteload allocations which will result in the discharge maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data must represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are the calculated on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from Attachment A submitted as part of the permit application and the monthly DMRs has been reviewed and determined to be suitable for evaluation. The facility has experienced some exceedances of the Total Phosphorus concentration limits which have been addressed by the facility. The facility was only required to perform one Attachment A scan and the following parameters were noted in detectable quantities: Barium, Copper, Lead, Manganese, Nickel, Zinc, and Di-2-Ethylhexyl Phthalate.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- f = Decimal fraction of critical flow from mixing evaluation
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for aquatic ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
- C_s = Mean background concentration of parameter in the receiving stream.

The Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9VAC25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:

- The effluent enters the stream from the bank, either via a pipe, channel or ditch.
- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).
- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different from the stream's ambient temperature and salinity).
- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.
- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

If it is suitably demonstrated that a reasonable potential for lethality or chronic impacts within the physical mixing area doesn't exist, then the basic complete mix equation, with 100% of the applicable stream flow, is appropriate. If the mixing analysis determines there is a potential for lethality or chronic impacts within the physical mixing area, then the proportion of stream flow that has mixed with the effluent over the allowed exposure time is used in the basic complete mix equation. As such, the wasteload allocation equation is modified to account for the decimal fraction of critical flow (f).

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage, and Attachment A data indicate Barium, Copper, Lead, Manganese, Nickel, Zinc, and Di-2-Ethylhexyl Phthalate are present in the discharge.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

The Policy for Sewage Treatment in the Dulles Area Watershed requires that the permit have a TKN monthly average limit of 1.0 mg/L. The Total Kjeldahl Nitrogen (TKN) analysis measures both organic nitrogen and ammonia nitrogen. A TKN limit of 1.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when the 1.0 mg/L TKN limit is met. It is staff's Best Professional Judgment that an ammonia limit is not necessary, and that the TKN monthly average limit of 1.0 mg/L is protective of the water quality standards.

2) Metals:

The need for limits for Barium, Copper, Lead, Manganese, Nickel, and Zinc was evaluated. The Site Specific Target Value for Barium is 2600 ug/L and the effluent value is 16 ug/L, so it is staff's best professional opinion that there is no reasonable potential to exceed the Water Quality Criteria (WQC) and no limit is necessary. The other parameters were entered into STATS and the need for a limit was evaluated. Of the parameters evaluated, limits are necessary for copper and zinc; the limit determinations are found in Attachment 8. Because this is a fairly new facility with limited data, staff proposes monitoring for dissolved copper, dissolved zinc, and total hardness on a quarterly basis for the reissuance. The need for limits will be re-evaluated with this additional data.

3) Di-2-Ethylhexyl Phthalate (AKA bis-2-ethylhexyl phthalate):

A limit would be necessary for this parameter based on the one data point provided as part of the application. The limit evaluation is found in Attachment 8. Because this is a new facility with limited data, staff proposes monitoring for di-2-ethylhexyl phthalate on a quarterly basis for the reissuance. The need for a limit will be re-evaluated with this additional data.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

The Policy for Sewage Treatment in the Dulles Area Watershed includes minimum effluent quality requirements. The limits presented below that are proposed in this permit are prescribed in 9VAC25-400-30. B.

Parameter	Monthly Average
Chemical Oxygen Demand	10.0 mg/L
Total Suspended Solids	1.0 mg/L
Total Phosphorus	0.10 mg/L
Turbidity	0.5 NTU
Total Kjeldahl Nitrogen	1.0 mg/L
E. coli	<2 n/cmL

The D.O. limit is set to meet the water quality criteria for D.O. in the receiving stream.

The limits for pH are based on the water quality criteria.

e) Effluent Maximum Annual Loading Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. There are three regulations that necessitate the inclusion of nutrient limitations:

- 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires new or expanding discharges with design flows of ≥0.04 mgd to treat for TN and TP to either BNR levels (TN = 8 mg/l; TP = 1.0 mg/l) or SOA levels (TN = 3.0 mg/l and TP = 0.3 mg/l).

- 9VAC25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e., those with design flows of ≥0.5 mgd above the fall line and ≥0.1 mgd below the fall line. This regulation limits the total nitrogen and total phosphorus mass loadings from these discharges.

- 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN010017.

Monitoring for Nitrates + Nitrites is included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820.

Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen are included in this individual permit. No annual average concentration limit for Total Phosphorus is necessary. The Dulles Policy requires a monthly average concentration of 0.10 mg/L. This monthly limitation is more stringent than the annual average limit required by 9VAC25-40-70A.

The TN annual average concentration limits for the 11.0 MGD design flow is 4.0 mg/L. The limit is included per 9VAC25-40.70.A.4., and is based on the values used to derive the WLA per 9VAC25-720.50.C.

The TN annual average concentration limit for the 22.0 MGD design flow is 3.0 mg/L. The limit is included per 9VAC25-70.A.3.

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Chemical Oxygen Demand, Total Suspended Solids, TKN, pH, Turbidity, Total Phosphorus, Dissolved Oxygen, and *E. coli*. Monitoring was included for Dissolved Copper, Dissolved Zinc, Total Hardness, Di-2-EthylHexyl Phthalate, Nitrates + Nitrites, and Total Nitrogen.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l) with the flow values (in MGD) and a conversion factor of 3.785.

The mass loading (lb/day) for the monthly and weekly averages for Total Phosphorus were calculated by multiplying the concentration values (mg/L) with the flow values (in MGD) and a conversion factor of 8.34.

No loading limits are assigned to toxic parameters because the water quality criteria are concentration-based (DEQ Guidance Memorandum 00-2011).

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD/CBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

The limits are at least as stringent as the issuance and backsliding does not apply.

19.a Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 11.0 MGD.

Effective Dates: During the period beginning with the reissuance of the permit and lasting until the issuance of the CTO for the 22.0-MGD facility or until the expiration date of the permit, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
COD (mg/L)	5	10 mg/L 416 kg/day	15 mg/L 624 kg/day	NA	NA	1/D	24H-C
TSS (mg/L)	5	1.0 mg/L 42 kg/day	1.5 mg/L 62 kg/day	NA	NA	1/D	24H-C
TKN (mg/L)	5	1.0 mg/L 92 lb/day	1.5 mg/L 138 lb/day	NA	NA	1/D	24H-C
Nitrate+Nitrite, as N	3	NL mg/L	NA	NA	NA	1/W	24H-C
Total Nitrogen**	3	NL mg/L	NA	NA	NA	1/W	Calculated
Total Nitrogen Year to Date	3	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year	3	4.0 mg/L	N/A	N/A	NA	1/YR	Calculated
Total Phosphorus	5	0.10 mg/L 9.2 lb/day	0.15 mg/L 14 lb/day	NA	NA	1/D	24H-C
Turbidity	5	0.5 NTU	NA	NA	NA	3/D 8H	Grab
pH (s.u.)	3	NA	NA	6.0	9.0	1/D	Grab
Dissolved Oxygen (mg/L)	2, 3	NA	NA	6.0 mg/L	NA	1/D	Grab
E. coli (Geometric Mean)	5	<2 n/100mls	NA	NA	NA	1/D	Grab
Chronic Toxicity – *C. dubia* (TU_c)	NA	NA	NA	NA	NL	1/3M	24H-C
Chronic Toxicity – *P. promelas* (TU_c)	NA	NA	NA	NA	NL	1/3M	24H-C
Dissolved Copper	3	NL	NL	NA	NA	1/3M	Grab
Dissolved Zinc	3	NL	NL	NA	NA	1/3M	Grab
Total Hardness (as Calcium Carbonate)	3	NL	NL	NA	NA	1/3M	Grab
Di-2-EthylHexyl Phthalate	3	NL	NL	NA	NA	1/3M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. VDH-DEQ Disinfection Policy
5. Policy for the Dulles Area Watershed

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once per week.
1/M = Once per month.
1/3M = Once every three months.
3/D 8H = Three per day at 8-hour intervals.
1/YR = Once every year.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

** Total Nitrogen = Sum of TKN plus Nitrate + Nitrite

19.b Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 22.0 MGD.
Effective Dates: During the period beginning with the issuance of the CTO for the 22.0-MGD facility until the expiration date of the permit.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
COD (mg/L)	5	10 mg/L 832 kg/day	15 mg/L 1249 kg/day	NA	NA	1/D	24H-C
TSS (mg/L)	5	1.0 mg/L 83 kg/day	1.5 mg/L 125 kg/day	NA	NA	1/D	24H-C
TKN (mg/L)	5	1.0 mg/L 184 lb/day	1.5 mg/L 275 lb/day	NA	NA	1/D	24H-C
Nitrate+Nitrite, as N	3	NL mg/L	NA	NA	NA	3 D/W	24H-C
Total Nitrogen **	3	NL mg/L	NA	NA	NA	3 D/W	Calculated
Total Nitrogen Monthly	3	NA	NA	NA	NA	1/M	Calculated
Total Nitrogen Year to Date	3	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen Calendar Year	3	3.0 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	5	0.10 mg/L 18 lb/day	0.15 mg/L 28 lb/day	NA	NA	1/D	24H-C
Turbidity	5	0.5 NTU	NA	NA	NA	3/D 8H	Grab
pH (s.u.)	3	NA	NA	6.0	9.0	1/D	Grab
Dissolved Oxygen (mg/L)	2, 3	NA	NA	6.0 mg/L	NA	1/D	Grab
E. coli (Geometric Mean)	5	<2 n/100mls	NA	NA	NA	1/D	Grab
Chronic Toxicity – *C. dubia* (TU_c)	NA	NA	NA	NA	NL	1/3M	24H-C
Chronic Toxicity – *P. promelas* (TU_c)	NA	NA	NA	NA	NL	1/3M	24H-C
Dissolved Copper	3	NL	NL	NA	NA	1/3M	Grab
Dissolved Zinc	3	NL	NL	NA	NA	1/3M	Grab
Total Hardness (as Calcium Carbonate)	3	NL	NL	NA	NA	1/3M	Grab
Di-2-EthylHexyl Phthalate	3	NL	NL	NA	NA	1/3M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. VDH-DEQ Disinfection Policy
5. Policy for the Dulles Area Watershed

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
3 D/W = Three days per week.
1/M = Once per month.
1/3M = Once every three months.
3/D 8H = Three per day at 8-hour intervals.
1/YR = Once every year.

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

** Total Nitrogen = Sum of TKN plus Nitrate + Nitrite

20. Other Permit Requirements :

a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

This is a major, municipal facility with design flows of 11.0 and 22.0 MGD; therefore, the facility shall continue to monitor chronic toxicity using two test species, *Ceriodaphnia dubia* and *P. promelas*. The facility has noted some toxicity with *Ceriodaphnia dubia* in one of the quarterly samples (Attachment 9), but changed one of the chemicals it was using for control of filamentous bacteria and the toxicity was resolved. The facility was granted a reduction in the frequency of toxicity testing. Since the CTO for the 11 MGD flow tier was issued on May 26, 2010, the facility shall commence quarterly monitoring for two years 6-months after the CTO issuance date. Once the quarterly monitoring is completed, the facility may request a reduction in the frequency if all tests pass the screening criteria. Once the CTO for the 22 MGD is issued, the facility shall again collect quarterly samples for two years.

c) Permit Section Part I.D., details the requirements of a Pretreatment Program.
The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.D. requires all discharges to protect water quality. The VPDES Permit Regulation at 9VAC25-31-730 through 900, and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

With this reissuance, the facility shall be required to perform an Industrial Users Survey and submit the results to DEQ. If warranted, the facility shall be required to develop a pretreatment program for approval. Part I.D. of the permit contains the pretreatment language.

d) Permit Section Part I.E. details requirements of the Sewage Sludge Management Plan, Sludge Monitoring and Additional Reporting Requirements.

1. Regulations:

The VPDES Permit Regulation (9VAC25-31-10 et seq.), has incorporated technical standards for the use or disposal of sewage sludge, specifically land application and surface disposal, promulgated under 40 CFR Part 503.

The Permit Regulation (9VAC25-31-420) also establishes the standards for the use or disposal of sewage sludge. This part establishes standards that consist of general requirements, pollutant limits, management practices, and operational standards for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in the treatment works.

2. Evaluations:
Sludge Classification:

The Broad Run WRF is considered as Class I sludge management facility. The permit regulation (9VAC25-31-500) defines a Class I sludge management facility as any POTW which is required to have an approved pretreatment program defined under Part VII of the VPDES Permit Regulation (9VAC25-31-730 to 900) and/or any treatment works treating domestic sewage sludge that has been classified as a Class I facility by the Board because of the potential for its sewage sludge use or disposal practice to adversely affect public health and the environment.

Sludge Pollutant Concentration:
The average pollutant concentrations from sewage sludge analyses provided as part of the Broad Run WRF application for the permit reissuance are presented in Table 3. The analysis results are from samples collected May 2009 and July 2009. The facility came online in May 2008 and there was no sludge generated during the initial months of operation.

Table 3 – Broad Run WRF Results

Pollutant	Concentration (mg/kg dry weight)	Sample Type
Arsenic	<1.9, 1.9	Composite
Cadmium	0.29, 0.52	Composite
Chromium	18, 19	Composite
Copper	320, 440	Composite
Lead	6.9, 9.9	Composite
Mercury	0.86, 0.53	Composite
Molybdenum	6.4, 8.4	Composite
Nickel	12, 13	Composite
Selenium	5.4, 5.9	Composite
Zinc	530, 740	Composite

All sewage sludge applied to the land must meet the ceiling concentration for pollutants, listed in Table 4. Sewage sludge applied to the land must also meet either pollutant concentration limits, cumulative pollutant loading rate limits, or annual pollutant loading rate limits, also listed in Table 4.

Cumulative pollutant loading limits or annual pollutant loading limits may be applied to sewage sludge exceeding pollutant concentration limits but meeting the ceiling concentrations, depending upon the levels of treatment achieved and the form (bulk or bag) of sludge applied. It should be noted that ceiling concentration limits are instantaneous values and pollutant concentration limits are monthly average values. Calculations of cumulative pollutant loading should be based on the monthly average values and the annual whole sludge application rate.

Table 4- SEWAGE SLUDGE POLLUTANT LIMITS

Pollutant	Ceiling Concentration Limits for All Sewage Sludge Applied to Land (mg/kg)*	Pollutant Concentration Limits for EQ and PC Sewage Sludge (mg/kg)*	Cumulative Pollutant Loading Rate Limits for CPLR Sewage Sludge (kg/hectare)	Annual Pollutant Rate Limits for APLR Sewage Sludge (kg/hectare/356 day period)**
Arsenic	75	41	41	2.0
Cadmium	85	39	39	1.9
Copper	4,300	1,500	1,500	75
Lead	840	300	300	15
Mercury	57	17	17	0.85
Molybdenum	75	---	---	---
Nickel	420	420	420	21
Selenium	100	100	100	5.0
Zinc	7,500	2,800	2,800	140
Applies to:	All sewage sludge that is land applied	Bulk sewage sludge and bagged sewage sludge	Bulk sewage sludge	Bagged sewage
From VPDES Permit Reg. Part VI	Table 1, 9VAC25-31-540	Table 3, 9VAC25-31-540	Table 2, 9VAC25-31-540	Table 4, 9VAC25-31-540

*Dry-weight basis

**Bagged sewage sludge is sold or given away in a bag or other container.

Comparing data from Table 3 with Table 4 shows that metal concentrations are significantly below the ceiling and PC concentration requirements.

3. Options for Meeting Land Application:

There are four equally safe options for meeting land application requirements. The options include the Exceptional Quality (EQ) option, the Pollutant Concentration (PC) option, the Cumulative Pollutant Loading Rate (CPLR) option, and the Annual Pollutant Loading Rate (APLR) option.

Pollutant Concentration (PC) is the type of sludge that may only be applied in bulk and is subject to general requirements and management practices; however, tracking of pollutant loadings to the land is not required. The sludge from the Broad Run WRF is considered Pollutant Concentration (PC) sewage sludge for the following reasons:

a) The bulk sewage sludge from the Broad Run WRF meets the PC limits in Table 1 of VPDES Permit Regulation Part VI, 9VAC25-31-540.

b) The VPDES Permit Regulation, Part VI, Subpart D, (9VAC25-31-690 through 720) establishes the requirements for pathogen reduction in sewage sludge. The Broad Run WRF is considered to produce a Class B sludge in accordance with the regulation (9VAC25-31-710.B.2. - Class B -Alternative 2. Alternative 2 defines Class B sludge as "Sewage sludge that is used or disposed that has been treated in a process that is equivalent to a Process to Significantly Reduce Pathogens (PSRP), as described in (9VAC25-31-710.D.). The Broad Run WRF treats sludge using an anaerobic digestion process to reduce pathogens in accordance with the requirements of (9VAC25-31-710.D.3.).

c) The VPDES Permit Regulation, Part VI, Subpart D, (9VAC25-31-690 through 720) also establishes the requirements for Vector Attraction Reduction in sewage sludge. Based on the information supplied with the VPDES Sludge Application, the Broad Run WRF meets the requirements for Vector Attraction Reduction as defined by (9VAC25-31-720.B.1): the mass of volatile solids in the sewage sludge is reduced

by a minimum of 38 percent, calculated according to the method in 9VAC25-31-490.B.8.).

4) Parameters to be Monitored:

In order to assure the sludge quality, the following parameters require monitoring: Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

In order to ensure that proper nutrient management and pH management practices are employed, the following parameters are required: pH, Total Kjeldahl Nitrogen, Ammonia Nitrogen, Nitrate Nitrogen, Total Phosphorus, Total Potassium, and Alkalinity (lime treated sludge should be analyzed for percent calcium carbonate equivalence). The nutrient and pH monitoring requirements apply only if the permittee land applies their own sludge. Since Broad Run WRF has contracted the land application responsibilities to Synagro Central LLC of Baltimore, Maryland, they are not required to monitor for nutrients, pH, Total Potassium and Alkalinity.

Soil monitoring in conjunction with soil productivity information is critical, especially for frequent applications, to making sound sludge application decisions from both an environmental and an agronomic standpoint. Since Broad Run WRF has contracted the land application responsibilities to Synagro Central LLC of Baltimore, Maryland, they are not required to perform soil monitoring.

5) Monitoring Frequency:

The monitoring frequency is based on the amount of sewage sludge applied in a given 365-day period. The permit application indicates that the total dry metric tons of sewage sludge generated at Broad Run WRF are 3650 dry metric tons per 365-day period. In the permit manual, the monitoring frequency for facilities that produce more than 1500 but less than 15, 000 metric tons per 365-day period is once per 60 days (6 times per year). This reissuance proposes a monitoring frequency of 1/2M.

Broad Run WRF is required to provide the results of all monitoring performed in accordance with Part I.A., and information on management practices and appropriate certifications no later than February 19th of each year (as required by the 503 regulations) to the Northern Regional Office of the Department of Environmental Quality. Each report must document the previous calendar year's activities.

6) Sampling:

Representative sampling is an important aspect of monitoring. Because the pollutant limits pertain to the quality of the final sewage sludge applied to the land, samples must be collected after the last treatment process prior to land application. Composite samples should be required for all samplings from this facility.

7) Sludge Management Plan (SMP):

The SMP is required to be part of the VPDES permit application. The VPDES Sewage Sludge Permit Application Form and its attachments will constitute the applicant's SMP. Any proposed sewage treatment works treating domestic sewage must submit a SMP with the appropriate VPDES permit application forms at least 180 days prior to the date proposed for commencing operations. The permittee shall conduct all sewage sludge use or disposal activities in accordance with the SMP approved with the issuance of this permit. Any proposed changes in the sewage sludge use or disposal practices or procedures followed by the permittee shall be documented and submitted for Virginia Department of Environmental review and approval no less than 90 days prior to the effective date of the changes.

Upon approval, the SMP becomes an enforceable part of the permit. The permit may be modified or alternatively revoked and reissued to incorporate limitations/conditions necessitated by substantial changes in sewage sludge use or disposal practices.

Broad Run WRF has submitted the VPDES Sewage Sludge Permit Application Form and its attachments. Their SMP dated September 30, 2009, is on file at the Northern Regional Office of the Department of Environmental Quality.

8) Reporting Requirements:

The reporting requirements are for POTWs with a design flow rate equal to or greater than 1 MGD (majors), POTWs that serve a population of 10,000 or greater, and Class I sludge management facilities. A permit special condition, which requires these generators to submit an annual report on February 19th of each year, is included. The Broad Run WRF shall use the Discharge Monitoring Report (DMR) forms as part of the annual report. A sample form (SP1 and S01) with proper DMR parameter codes and its instructions are provided. In addition to the DMR forms, the generators who land apply sewage sludge are responsible for submitting the additional information required by 9VAC25-31-590, *i.e.*, appropriate certification statements, descriptions of how pathogen and vector attraction reduction requirements are met, descriptions of how the management practices (if applicable) are being met, and descriptions of how site restrictions (if applicable) are being met.

9) Records Keeping:

This special condition outlines record retention requirements for sludge meeting Class B pathogen reduction and vector attraction reduction alternative 1-10. Table 5 presents the record keeping requirements.

Table 5: Record Keeping for PC Sludge

1	Pollutant concentrations of each pollutant in Part I.A.3. of the permit;
2	Description of how the pathogen reduction requirement in Part I.A.3. of the permit are met;
3	Description of how the vector attraction requirements in Part I.A.3. of the permit are met;
4	Description of how the management practice specified in the approved Sludge Management Plan and/or the permit are met;
5	Description of how the site restriction specified in the Sludge Management Plan and/or the permit are met;
6	Certification statement in Part I.E.3.b.2.f. of the permit.

21. Other Special Conditions (Part I.F.):

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b) Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class I operator.

f) Reliability Class. The Sewerage Regulation at 9VAC25-60-20 and 9VAC25-60-40 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. This facility is required to meet a reliability class of I.

g) Instream Monitoring. The Policy for Sewage Treatment in the Dulles Area Watershed at 9VAC25-400-50 requires that the sewage treatment plants identified in 9VAC25-400-30 participate in an instream monitoring program that shall assess the impact of the sewage treatment plant discharge to the downstream watershed. This special condition shall require the permittee to develop an instream monitoring program, in consultation with the Fairfax County Water Authority, within one year of the permit's effective date. The facility shall continue to monitor in accordance with the approved monitoring plan. The instream monitoring plan shall be reviewed and any updates or a statement of completeness submitted to DEQ within 6 months of the reissuance date.

h) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

i) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works. Included in Part I.E. of the permit.

j) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.J., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage. Included in Part I.E. of the permit.

k) TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may to developed and approved for the receiving stream. See Fact Sheet Section 26 for further discussion.

l) Nutrient Reopener. 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

m) E3/E4. 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

n) Nutrient Offsets. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

o) Nitrate Concentrations in the Potomac River. This special condition requires the permittee to know what the nitrate concentration is in the Potomac River in the vicinity of the Fairfax County Water Authority's intake on the Potomac River (9VAC25-401-30 B). Should the nitrate concentrations at the intake reach 5 mg/L, the permittee shall evaluate measures they can take to minimize impacts their discharge has on the nitrate concentrations and implement those measures deemed feasible and effective.

p) PCB Monitoring. This special condition requires the permittee to conduct PCB dry weather and wet weather monitoring using ultra-low level PCB analysis to support the development of the PCB TMDL for the fish consumption use impairment in the Broad Run watershed.

q) Unauthorized, Unusual, or Extraordinary Discharge Notification. Due to the close proximity of major, regional drinking water supply intakes downstream of this discharge, the permittee shall notify Fairfax Water, the Maryland Department of the Environment, and the Interstate Commission of the Potomac River Basin (ICPRB) within six (6) hours of an unauthorized, unusual, or extraordinary discharge.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

Permit Section Part III. Part III of the permit contains the Reclaimed Water Standards and Monitoring as well as the special conditions applicable to the reclamation and reuse of the Broad Run effluent. The Fact Sheet for Part III of the permit is contained in Attachment 10.

22. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
   1) The O&M special condition was updated to reflect current agency guidance.
   2) The Final Effluent Reuse special condition was removed since all the reuse special conditions are incorporated into Part III of the permit.
   3) The Discharge Monitoring Report Submittal special condition was removed since the facility is now built and operational and DMRs are submitted monthly.
   4) The Water Quality Criteria Monitoring Special Condition was removed since the facility shall be required to perform the priority pollutant monitoring (three scans) in conjunction with Form 2A with the next permit reissuance.
   5) A special condition requiring notification to Fairfax Water, MDE, and ICPRB for unauthorized, unusual, or extraordinary discharge was added to the permit.

b) Monitoring and Effluent Limitations:
   1) The 5.5 MGD tier was removed since the CTO for the 11 MGD tier was issued on May 26, 2010.
   2) The TN and TP annual loadings were removed from this permit since they are governed by the General Permit VAN010017.
   3) Orthophosphate monitoring was removed from this permit since it is monitored in the facility's General Permit VAN010017.
   4) Based on the actual sludge volume provided in the application, the monitoring for the sludge was increased to 1/2 months (6 times per year).
   5) The temperature monitoring has been removed from the permit.
   6) Monitoring for Dissolved Copper, Dissolved Zinc, Total Hardness, and Di-2-Ethylhexyl Phthalate based on the data provided with the application.

23. Variances/Alternate Limits or Conditions:
There are no variances contained in this permit reissuance.

24. Public Notice Information:

First Public Notice Date: 7/7/2010 Second Public Notice Date: 7/14/2010

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703)583-3834, alison.thompson@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer

and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

25. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

Outfall 001 discharges to Broad Run, which is broken into two assessment units from the location of the discharge downstream to the confluence with the Potomac River. Segment VAN-A09R_BRB02A06 begins at the confluence with Cabin Branch, at rivermile 5.35, and continues downstream until the confluence with Beaverdam Run. Segment VAN-A09R_BRB01A00 begins at the confluence with Beaverdam Run, approximately 0.8 rivermile upstream from Route 7, and continues downstream until the confluence with the Potomac River. Both of these segments have the following impairments:

1. Aquatic Life Use:
   Two biological monitoring events in 2004 and two biological monitoring events in 2005 at station 1aBRB002.15 each resulted in a VSCI score which indicates an impaired macroinvertebrate community. (VAN-A09R_BRB01A00)

   The benthic macroinvertebrate impairment is based on biological monitoring at stations 1aBRB002.15 (two biological monitoring events in 2004 and two in 2005) and 1aBRB006.97 (two biological monitoring events in 2005), along immediate downstream and upstream assessment units, respectively. (VAN-A09R_BRB02A06)

2. Fish Consumption Use:
   The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel consumption to no more than two meals per month. The affected area includes the following tributaries between the Virginia/Maryland state line near the Route 340 bridge (Loudoun County) to the I-395 bridge in Arlington County (above the Woodrow Wilson Bridge): Goose Creek up to the Dulles Greenway Road Bridge, Broad Run up to the Route 625 bridge, Difficult Run up to the Route 7 bridge, and Pimmit Run up to the Route 309 bridge. Additionally, excursions above the water quality criterion based tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in one specie of fish samples (2 total samples); American eel (2001) and American eel (2004) at monitoring station 1aBRB002.15.

There has not been a TMDL prepared for either of the above listed impairments. Both the benthic TMDL and the PCB TMDL are due in 2018.

In preparation for the PCB TMDL that will be developed for Broad Run by 2018, the DEQ-NRO Assessment/TMDL Staff recommend that this facility perform low-level PCB monitoring during the upcoming permit cycle. TMDL Guidance Memo No. 09-2001 recommends that major municipal VPDES facilities collect 2 wet and 2 dry samples during the permit cycle, using EPA Method 1668B, which is capable of detecting low-level concentrations for all 209 PCB congeners. (Fact Sheet Section 21.p. for the special condition)

26. Additional Comments:

The EPA Checklist is found in Attachment 13.

The facility was referred to enforcement due to Total Phosphorus Monthly Average Concentration and Monthly Average Loading exceedances in July 2009 and for failure to provide the toxics monitoring report in a timely manner. The facility has resolved these issues and the facility has been de-referred.

The draft permit received minor comments from Fairfax Water. They asked that future public notices include notification for reclamation and reuse; DEQ agreed to develop new language for future notices. Another request was for the Reclaimed Water Management Plan to be an attachment to the permit. Since it is not a static document, DEQ agreed to provide a copy of the Plan to Fairfax Water, but not attach it to the permit. The final request was for discussions to reopen regarding the instream monitoring conducted by Loudoun Water. DEQ agreed to coordinate the discussions amongst the interested parties.

February 1, 2010
MEMORANDUM

TO: VPDES Reissuance File VA0091383

FROM: Alison Thompson

SUBJECT: Flow Frequency Determination of VPDES Permit No. VA0091383
Broad Run WRF

COPIES:

This is the reissuance of a VPDES permit and will need a Flow Frequency determination. There is a new gaging station on Broad Run near Leesburg, Virginia, downstream from the proposed outfall location. The gaging station (#01644280) has a drainage area of 76.1 sq. mi.; the station does not have enough data to generate the statistical flow information. The discharge location is less than a mile upstream from the gaging station. Since there is such a small distance between the two, staff proposes to use the drainage area for the gaging station to do a flow determination for the proposed outfall location. The flow frequencies at the outfall location shall be determined using values at the Catoctin Creek gaging station at Taylorstown, Virginia, and adjusting them by proportional drainage areas.

Catoctin Creek near Taylorstown, VA (#01638480)

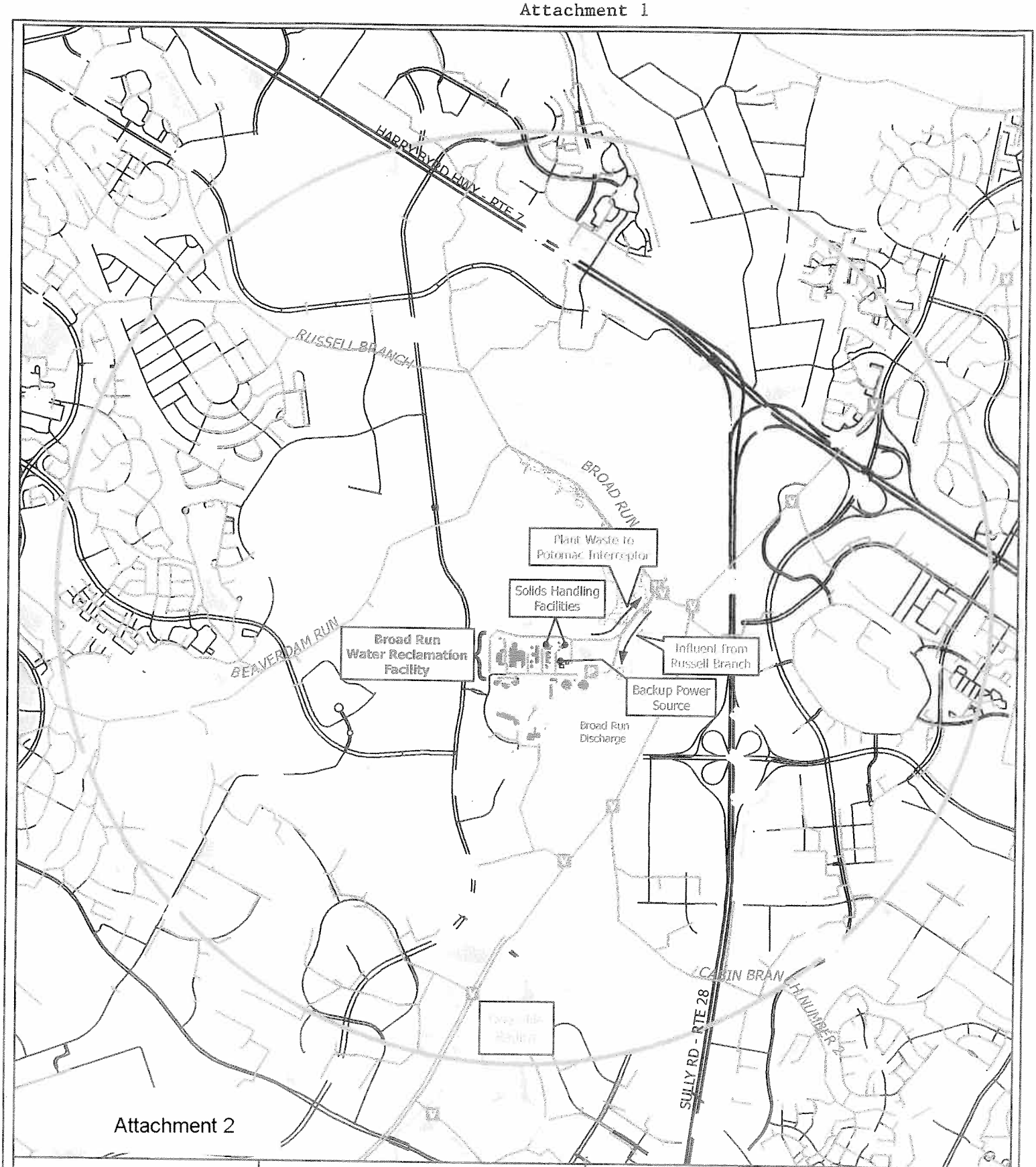
Drainage area	=	89.6 sq. mi.
1Q10	=	0.52 cfs
7Q10	=	0.63 cfs
30Q5	=	2.8 cfs
30Q10	=	1.5 cfs
High flow 30Q10	=	12 cfs
High flow 1Q10	=	4.9 cfs
High flow 7Q10	=	7.0 cfs
HM	=	11.0 cfs

Broad Run at the proposed discharge point

Drainage area	=	76.1 sq. mi.	
1Q10	=	0.44 cfs	0.28 MGD
7Q10	=	0.54 cfs	0.34 MGD
30Q5	=	2.38 cfs	1.54 MGD
30Q10	=	1.27 cfs	0.82 MGD
High flow 30Q10	=	10.2 cfs	6.59 MGD
High flow 1Q10	=	4.16 cfs	2.69 MGD
High flow 7Q10	=	6.03 cfs	3.90 MGD
HM	=	9.34 cfs	6.04 MGD

The high flow months are December - May

Attachment 1



LOUDOUN WATER

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Date Created: 9/23/09 by JRH

Legend

- 1 Mile Radius
- Vault
- Pump Station
- Gravity Main
- Plant Building
- Wetland
- Major Road
- Road
- Stream
- 25 Ft Contours

N

0 500 1,000 2,000 3,000 Feet

Broad Run Water Reclamation Facility

One-mile Vicinity

September 2009

NPDES Form 2A, Part B.3 - Process Flow Diagram / Schematic

Attachment 2

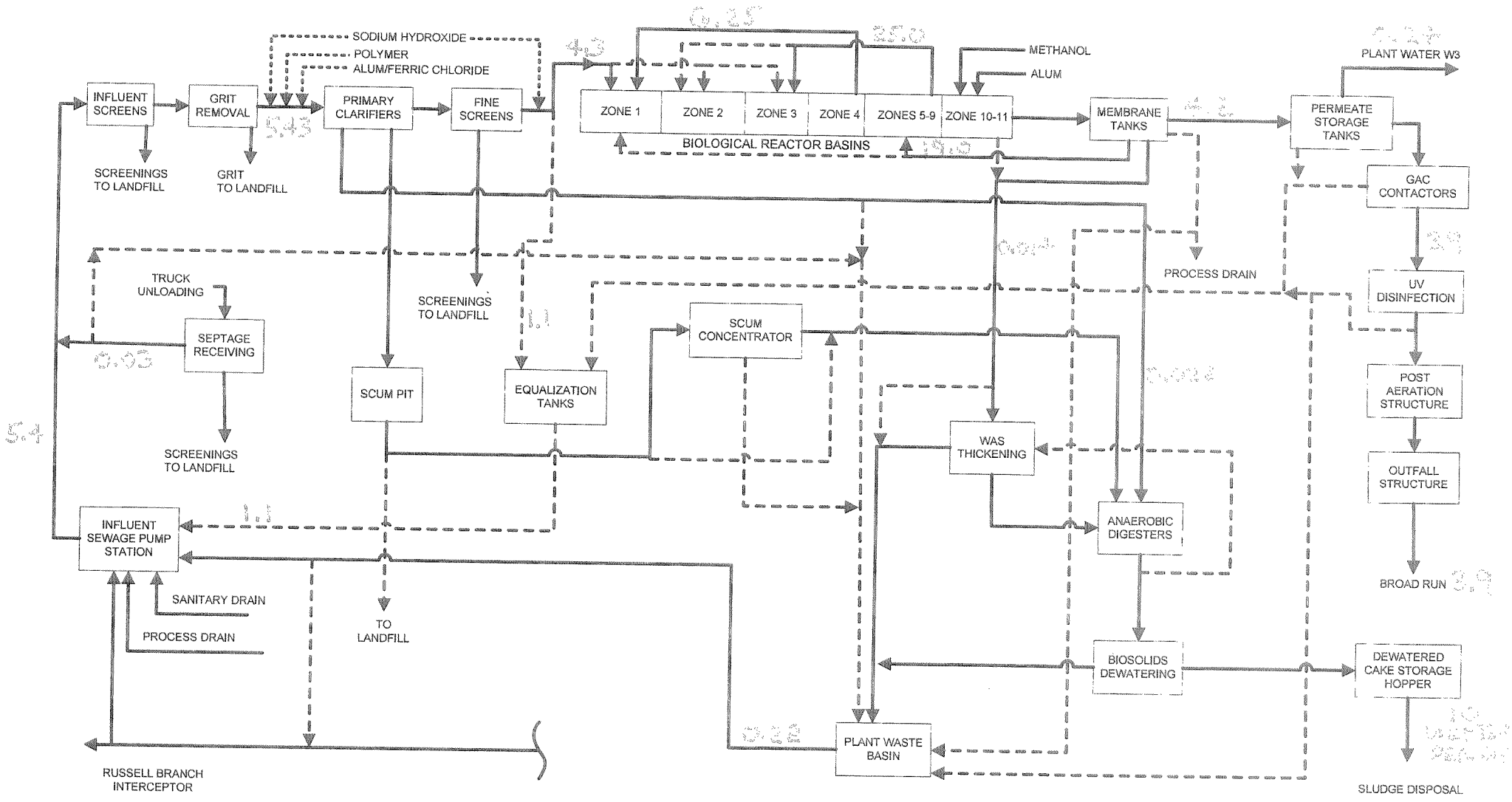


Figure 1-1: Plant Overview - Process Flow Diagram

NOTES:
ALL FLOWS INDICATED IN RED ARE IN MGD
ALL FLOWS INDICATED ARE CURRENT DESIGN FLOWS, NOT HISTORICAL FLOWS

Attachment 2

NPDES Form 2A, Part B. 3
Brief Narrative of Broad Run Water Reclamation Facility
Diagram / Schematic

The Broad Run Water Reclamation Facility (WRF) is owned and operated by Loudoun Water. The influent flow to the facility consists of raw sewage from Eastern Loudoun County. A diversion structure diverts flow from the Russell Branch Interceptor to the Influent Pump Station. A Septage Facility is at the site to receive a limited amount of septage hauled in from unsewered areas of the surrounding area.

Liquids Treatment
The liquids treatment portion of the process consists of preliminary and primary treatment, biological treatment with biological nutrient removal (BNR) in a membrane bioreactor (MBR), granular activated carbon (GAC) treatment, disinfection, and post aeration. Effluent is discharged to Broad Run, and ultimately flows to the Potomac River.

The Preliminary and Primary Treatment Facility consists of three coarse influent screens (6 mm), two pista-type grit removal units using vortex grit separators, three primary clarifiers, and three fine screens (2 mm). The Preliminary and Primary Treatment Facility is designed for a hydraulic peaking factor of 2.5. Downstream facilities are designed for a hydraulic peaking factor of 1.88. Flow in excess of the 1.88 peaking factor will be diverted to two 5-million gallon (MG) equalization tanks. When influent flow is reduced, the equalization tanks can be drained back to the Influent Pump Station for treatment.

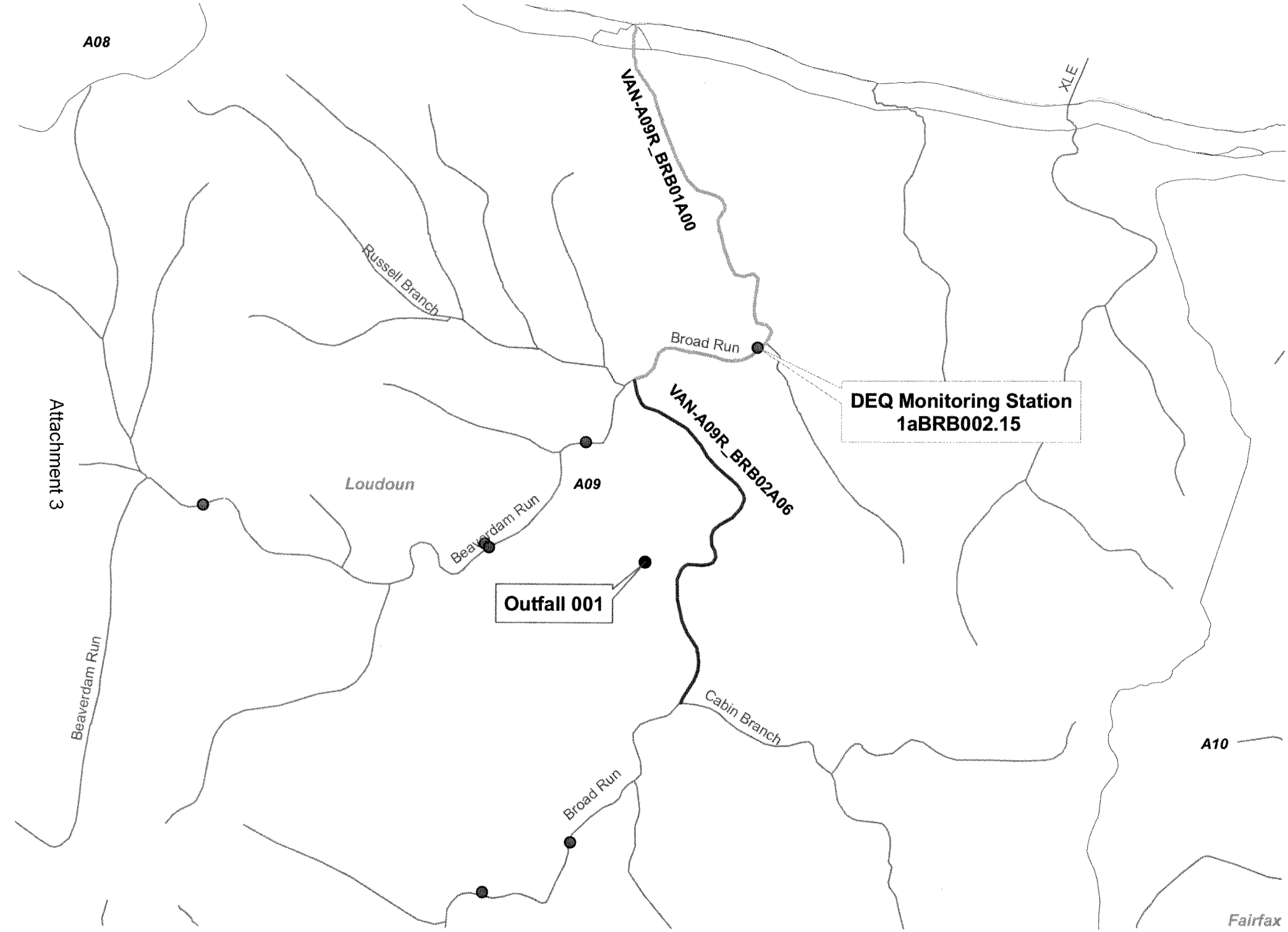
The biological treatment process is a five-stage MBR, consisting of an anaerobic zone, an anoxic zone, an aerobic zone, a second anoxic zone, and a final aerobic/membrane zone. Immersed membranes perform the membrane filtration (i.e., liquids/solids separation) function. There are three Biological Reactor Basins (BRBs) that have the capability to be operated in multiple treatment modes by reconfiguring the various recycle flowstreams.

Sodium hydroxide is added to the primary effluent for alkalinity control. Alum is added directly to the mixed liquor upstream of the membranes for phosphorus removal. Methanol is added to the BRBs as a supplemental carbon source to achieve low levels of effluent total nitrogen (TN).

Effluent from the biological treatment process, also known as membrane permeate, is pumped from the BRBs to two Permeate Storage Tanks. The membrane permeate flows by gravity to six GAC Contactors, three ultra-violet disinfection units, and two post-aeration structures. The GAC Contactors are provided to remove residual dissolved organic materials from the membrane permeate. The ultraviolet disinfection units and post aeration structures provide disinfection and oxygen addition, respectively prior to discharge to Broad Run.

Solids Treatment

Primary sludge and scum is pumped from the primary clarifiers directly to the anaerobic digesters. Waste activated sludge is thickened via thickening centrifuges. The primary sludge and scum and thickened waste activated sludge is fed to two anaerobic digesters to produce a Class B biosolids. The digested biosolids are pumped to two dewatering centrifuges to reduce the water content. Digested dewatered biosolids are stored in two cake hoppers. Anaerobically digested biosolids achieving Class B pathogen reduction are transferred offsite for land disposal on landfilling.


A08
VAN-A09R_BRB01A00
XLE
Russell Branch
Broad Run
DEQ Monitoring Station
1aBRB002.15
VAN-A09R_BRB02A06
Attachment 3
Loudoun
A09
Beaverdam Run
Outfall 001
Beaverdam Run
Cabin Branch
A10
Broad Run
Fairfax

Broad Run Water Reclamation Facility
Process Chemicals and Average (Avg.) Daily Inventory

Aluminum Sulfate: Stored in Chemical Distribution Building with a Max Storage Limit of 81,213 gallons (893,343 lbs.) and 2009 Avg. Daily Inventory of 22,139 gallons (243,529 lbs.)

Citric Acid: Stored in Chemical Distribution Building with a Max Storage Limit of 5,757 gallons (59,527 lbs.) and 2009 Avg. Daily Inventory of 2,301 gallons (23,792 lbs.)

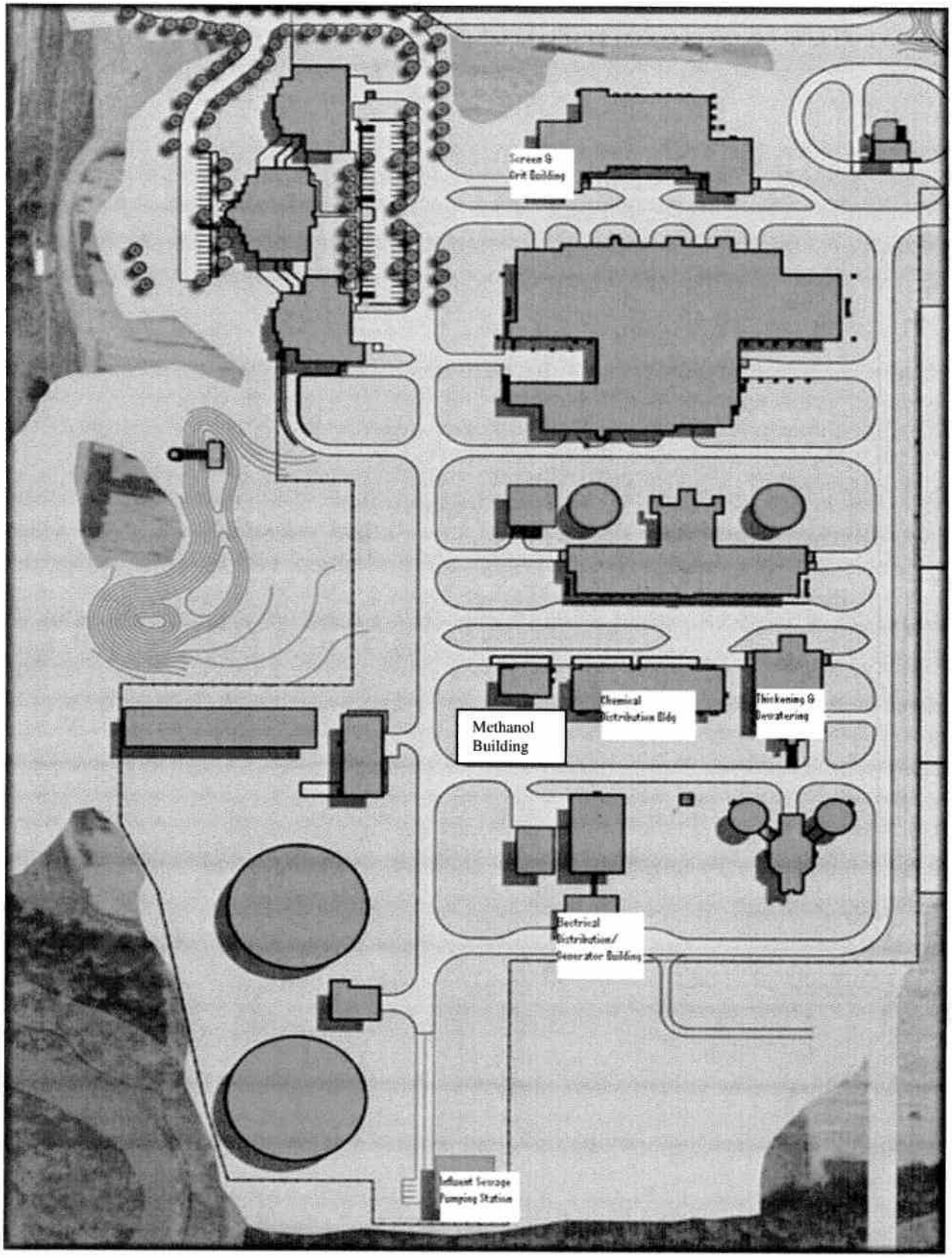
Sodium Hypochlorite: Stored in Chemical Distribution Building with a Max Storage Limit of 30,455 gallons (303,636 lbs.) and 2009 Avg. Daily Inventory of 15,590 gallons (155,432 lbs.)

Sodium Hydroxide: Stored in Chemical Distribution Building with a Max Storage Limit of 40,606 gallons (376,011 lbs.) and 2009 Avg. Daily Inventory of 14,378 gallons (133,140 lbs.)

Methanol: Stored in Methanol Distribution Building with a Max Storage Limit of 27,070 gallons (250,397 lbs.) and 2009 Avg. Daily Inventory of 8,694 gallons (80,419 lbs.)

Low Sulfur Diesel: Stored in fuel tanks at Electrical Distribution Building with a Max Storage Limit of 30,000 gallons (210,000 lbs.) and 2009 Avg. Daily Inventory of 21,000 gallons (147,000 lbs.)

Pollu-Tech Pollu-Treat 489: Stored in Thickening & Dewatering Building with a Max Storage Limit of 2,750 gallons (23,375 lbs.) and 2009 Avg. Daily Inventory of 1,100 gallons (9,350 lbs.).


Methanol
Building

Thompson, Alison (DEQ)

From: Canham, Robert [RCanham@loudounwater.org]
Sent: Thursday, January 28, 2010 5:58 AM
To: Thompson, Alison (DEQ)
Subject: FW: Process Chemicals and Avgjan2010.doc
Attachments: Process Chemicals and Avgjan2010.doc

Mornin' Alison, All of our chemicals, inventory and location as requested. Hope this helps. BOB.

From: Rumke, Michael
Sent: Wednesday, January 27, 2010 4:07 PM
To: Canham, Robert; McDonald, Leonard
Subject: Process Chemicals and Avgjan2010.doc

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3801
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

July 18, 2008

Mr. Robert Canham
Plant Manager
P.O. Box 4000
Ashburn, VA 20146

Re: Broad Run WRF, Permit Number VA0091383

Dear Mr. Canham:

Enclosed are copies of the technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at Broad Run –Water Reclamation Facility (WRF) on June 25th and 26th, 2008. The compliance staff would like to thank Michael Rumke and Sam Richardson for their time and assistance during the inspection.

A summary for both the technical is enclosed. The laboratory inspection will be sent under separate cover. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3882 or by E-mail at smmack@deq.virginia.gov.

Sincerely,

Sharon Mack

Sharon Mack
Environmental Specialist II

cc: Permits / DMR File, Compliance Manager
Compliance Auditor, Compliance Inspector
Steve Stell – OWCP

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0091383	**April 1, 2005**	**May 23, 2006**	**March 31, 2010**

Facility Name	Address	Telephone Number
Broad Run Water Reclamation Facility	**44961 Loudoun Water Way Ashburn**	**571-291-78820**
Owner Name	Address	Telephone Number
Loudoun County Sanitation Authority	**P.O. Box 4000 Ashburn, VA 20146**	**571-291-78820**
Responsible Official	Title	Telephone Number
Robert A Canham	**Plant Manager**	**571-291-7823**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Michael Rumke	**Class I; 1909 002060**	**571-291-7820**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major	**X**	Major		Primary	
Non-federal	**X**	Minor		Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**5.5 MGD**
Population Served	**44,000**
Connections Served	**1400**

EFFLUENT LIMITS: in mg/L unless otherwise specified

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
pH (s.u.)	**6.0**		**9.0**	**Dissolved Oxygen**	**6.0**		
Chemical Oxygen Demand		**10**	**15**	**Total Suspended Solids**		**1.0**	**1.5**
Turbidity, NTU		**0.5**		**E. coli n/100 mLs**		**<2**	
TKN		**1.0**	**1.5**	**Total Phosphorous**		**0.1**	**.15**

Receiving Stream	**Broad Run**
Basin	**Potomac River**
Discharge Point (LAT)	**39°01'50"**
Discharge Point (LONG)	**77°26'39"**

VPDES NO. **VA0091383**

REV 5/00

DEQ
WASTEWATER FACILITY
INSPECTION REPORT
PART 1

Inspection date:	**June 25, 2008**	Date form completed:	**July 18, 2008**
Inspection by:	**Sharon Mack**	Inspection agency:	**DEQ NRO**
Time spent:	**25 hrs**	Announced:	**No**
Reviewed by:		Scheduled:	**Yes**

Present at inspection: **Michael Rumke**
Sam Richardson

TYPE OF FACILITY:

	Domestic	**Industrial**	
[ ] Federal	[**X**] Major	[ ] Major	[ ] Primary
[**X**] Nonfederal	[ ] Minor	[ ] Minor	[ ] Secondary

Type of inspection:

[**X**] Routine
[ ] Compliance/Assistance/Complaint
[ ] Reinspection

Date of last inspection: **None**
Agency: **NA**

Population served: approx. **44,000**

Connections served: approx. **1400**

Last month average: (Effluent) **May 2008**

Flow:	**2.9**	MGD	pH:	**7.0**	s.u.	DO (min)	**6.6**	mg/L
Temperature	**19**	°C	COD	**< QL**	mg/L	TSS	**< QL**	mg/L
E. coli	**< 2**	n/cml	Turbidity	**0.1**	NTU	Total Phosphorous	**0.2**	mg/L
Total Nitrogen	**7.7**	mg/L	Nitrite-Nitrate	**5.9**	mg/L	TKN	**1.9**	mg/L

Phosphorous and TKN violations were recorded but not assessed points – plant was in the 30 day start up grace period.

Quarter average: (Effluent) **May 2008 was the first month of discharge for this facility**

DATA VERIFIED IN PREFACE [**X**] Updated [ ] No changes

Has there been any new construction? [**X**] Yes [ ] No

If yes, were plans and specifications approved? [**X**] Yes [ ] No [ ] NA

DEQ approval date: **A CTO was issued May 6, 2008 with the condition that a sludge management plan be submitted within 90 days.**

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: I **7** II **Ø** III **1** IV **1** Trainee 3

2. Hours per day plant is manned: **24**

3. Describe adequacy of staffing. [**X**] Good [ ] Average [ ] Poor

4. Does the plant have an established program for training personnel? [**X**] Yes [ ] No

5. Describe the adequacy of the training program. [**X**] Good [ ] Average [ ] Poor

6. Are preventive maintenance tasks scheduled? [**X**]Yes [ ] No

7. Describe the adequacy of maintenance. [**X**] Good [ ] Average [ ] Poor*

8. Does the plant experience any organic/hydraulic overloading?
   If yes, identify cause and impact on plant: [ ] Yes [**X**] No

9. Any bypassing since last inspection? [ ] Yes [ ] No [**X**] NA

10. Is the standby electric generator operational? [**X**] Yes [ ] No* [ ] NA

11. Is the STP alarm system operational? [**X**] Yes [ ] No* [ ] NA

12. How often is the standby generator exercised? **Weekly, every Monday; under load monthly.**
    Power Transfer Switch? **Weekly**
    Alarm System? **Weekly**

13. When was the cross connection control device last tested on the potable water service? **April 22-24, 2008.**

14. Is sludge being disposed in accordance with the approved sludge disposal plan? **Due to DEQ by Aug. 6, 2008**
    [ ] Yes [ ] No [**X**] NA

15. Is septage received by the facility? [ ] Yes [ ] No **Not yet; maybe in about a month.**
    Is septage loading controlled? [ ] Yes [ ] No
    Are records maintained? [ ] Yes [ ] No

16. Overall appearance of facility: [ ] Good [ ] Average [ ] Poor

Comments:

1. Staff also includes eight maintenance personnel.

2. Two shifts per day; currently 4 operators on the day sift, two on nights.

4. Training includes:
On site training by more experienced operators; Vendor training in operation of process units Review classes for operator exams; and Virginia Tech Short School.

10. Three generators on site, which also provide power for the maintenance and admin. buildings next door.

13. The solids building was not operating at the time of this inspection. Solids are being sent to Blue Plains WWTP via the interceptor line from Dulles Airport.

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	[**X**] Yes	[ ] No	[ ] NA
Instrument maintenance and calibration	[**X**] Yes	[ ] No	[ ] NA
Mechanical equipment maintenance	[ ] Yes	[ ] No	[ ] NA
Industrial waste contribution (Municipal Facilities)	[**X**] Yes	[ ] No	[ ] NA

2. What does the operational log contain?

[**X**] Visual observations
[**X**] Laboratory results
[**X**] Control calculations
[**X**] Flow measurement
[**X**] Process adjustments
[ ] Other (specify)

Comments:

3. What do the mechanical equipment records contain?

[**X**] As built plans and specs
[**X**] Manufacturers instructions
[ ] Lubrication schedules
[ ] Spare parts inventory
[**X**] Equipment/parts suppliers
[ ] Other (specify)

Comments:

4. What do the industrial waste contribution records contain? (Municipal Only)

[**X**] Waste characteristics
[**X**] Impact on plant
[**X**] Locations and discharge types
[ ] Other (specify)

Comments:

5. Which of the following records are kept at the plant and available to personnel?

[ ] Equipment maintenance records
[**X**] Industrial contributor records
[**X**] Sampling and testing records
[**X**] Operational Log
[**X**] Instrumentation records

6. Records not normally available to plant personnel and their location: **None**

7. Were the records reviewed during the inspection? [**X**] Yes [ ] No

8. Are the records adequate and the O & M Manual current? [**X**] Yes [ ] No

9. Are the records maintained for the required 3-year time period? [ ] Yes [ ] No [**X**] NA

Comments:

1. The staff will have a maintenance schedule for all equipment. Currently, a lot is still under the care of the contractors and has not been turned over to Loudoun Water yet.

4. One industrial user- DDI. The annual survey is due in August.

5. The pretreatment program is under development.

9. The plant had only been discharging for one month at the time of this inspection

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? [**X**] Yes [ ] No*
2. Do sample types correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
3. Do sampling frequencies correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
4. Are composite samples collected in proportion to flow? [**X**] Yes [ ] No*
5. Are composite samples refrigerated during collection? [**X**] Yes [ ] No*
6. Does plant maintain required records of sampling? [**X**] Yes [ ] No*
7. Does plant run operational control tests? [**X**] Yes [ ] No

Comments:

(D) TESTING

1. Who performs the testing? [**X**] Plant [ ] Central Lab [**X**] Commercial Lab

Name:
Plant- Operators-DO, pH, turbidity
Lab-TSS, COD, TP, E coli

Martel Labs, Baltimore – TKN, NO2-NO3, TN

All compliance analyses will be done at Broad Run WTF eventually.

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **NA- chlorine not used for disinfection**
3. Does plant appear to have sufficient equipment to perform required tests? [**X**] Yes [ ] No*
4. Does testing equipment appear to be clean and/or operable? [**X**] Yes [ ] No*

Comments:

3. **Staff is in the process of purchasing an auto analyzer for nutrient analysis.**

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
   [ ] Yes [ ] No [**X**] NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
   [ ] Yes [ ] No [**X**] NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
   [ ] Yes [ ] No* [**X**] NA

Comments:

SUMMARY

Comments:

- **Broad Run WTF is one of 62 Membrane Bioreactor water treatment plants in the country, and is the biggest designed.**
- **The first day of discharge for this facility was May 2, 2008. While Loudoun Water is operating the plant, the care and maintenance of much of the equipment is still the responsibility of the contractors.**
- **The buildings and ground are very well maintained , especially with ongoing construction activities.**
- **The facility does not yet have a letter of agreement with a landfill to accept the grit and screenings.**
- **The solids processing part of the facility was not yet operating. Solids were being sent to Blue Plains WWTP via the interceptor line.**
- **All process units are equipped with odor control. The air is collected throughout the plant, sent through scrubbers, then through a biological media before being release to the atmosphere.**

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Broad Run WRF 5.5 MGD Permit No.: VA0091383

Receiving Stream: Broad Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	100 mg/L	1Q10 (Annual) =	0.28 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	140 mg/L
90% Temperature (Annual) =	23 deg C	7Q10 (Annual) =	0.34 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	24.25 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0.82 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	7.9 SU	1Q10 (Wet season) =	2.69 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.2 SU
10% Maximum pH =	SU	30Q10 (Wet season)	6.59 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	1.54 MGD			Discharge Flow =	5.5 MGD
Public Water Supply (PWS) Y/N? =	y	Harmonic Mean =	6.04 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	6.7E+02	9.9E+02	--	--	8.6E+02	1.3E+03	--	--	--	--	--	--	--	--	--	--	**8.6E+02**	**1.3E+03**
Acrolein	0	--	--	6.1E+00	9.3E+00	--	--	7.8E+00	1.2E+01	--	--	--	--	--	--	--	--	--	--	**7.8E+00**	**1.2E+01**
Acrylonitrile[C]	0	--	--	5.1E-01	2.5E+00	--	--	1.1E+00	5.2E+00	--	--	--	--	--	--	--	--	--	--	**1.1E+00**	**5.2E+00**
Aldrin [C]	0	3.0E+00	--	4.9E-04	5.0E-04	3.2E+00	--	1.0E-03	1.0E-03	--	--	--	--	--	--	--	--	**3.2E+00**	--	**1.0E-03**	**1.0E-03**
Ammonia-N (mg/l) (Yearly)	0	2.90E+01	2.83E+00	--	--	3.0E+01	3.3E+00	--	--	--	--	--	--	--	--	--	--	**3.0E+01**	**3.3E+00**	--	--
Ammonia-N (mg/l) (High Flow)	0	2.51E+01	4.56E+00	--	--	3.7E+01	1.0E+01	--	--	--	--	--	--	--	--	--	--	**3.7E+01**	**1.0E+01**	--	--
Anthracene	0	--	--	8.3E+03	4.0E+04	--	--	1.1E+04	5.1E+04	--	--	--	--	--	--	--	--	--	--	**1.1E+04**	**5.1E+04**
Antimony	0	--	--	5.6E+00	6.4E+02	--	--	7.2E+00	8.2E+02	--	--	--	--	--	--	--	--	--	--	**7.2E+00**	**8.2E+02**
enic	0	3.4E+02	1.5E+02	1.0E+01	--	3.6E+02	1.6E+02	1.3E+01	--	--	--	--	--	--	--	--	--	**3.6E+02**	**1.6E+02**	**1.3E+01**	--
um	0	--	--	2.0E+03	--	--	--	2.6E+03	--	--	--	--	--	--	--	--	--	--	--	**2.6E+03**	--
zene [C]	0	--	--	2.2E+01	5.1E+02	--	--	4.6E+01	1.1E+03	--	--	--	--	--	--	--	--	--	--	**4.6E+01**	**1.1E+03**
zidine[C]	0	--	--	8.6E-04	2.0E-03	--	--	1.8E-03	4.2E-03	--	--	--	--	--	--	--	--	--	--	**1.8E-03**	**4.2E-03**
zo (a) anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	**8.0E-02**	**3.8E-01**
zo (b) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	**8.0E-02**	**3.8E-01**
zo (k) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	**8.0E-02**	**3.8E-01**
zo (a) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	**8.0E-02**	**3.8E-01**
2-Chloroethyl Ether[C]	0	--	--	3.0E-01	5.3E+00	--	--	6.3E-01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**6.3E-01**	**1.1E+01**
2-Chloroisopropyl Ether	0	--	--	1.4E+03	6.5E+04	--	--	1.8E+03	8.3E+04	--	--	--	--	--	--	--	--	--	--	**1.8E+03**	**8.3E+04**
2-Ethylhexyl Phthalate [C]	0	--	--	1.2E+01	2.2E+01	--	--	2.5E+01	4.6E+01	--	--	--	--	--	--	--	--	--	--	**2.5E+01**	**4.6E+01**
omoform [C]	0	--	--	4.3E+01	1.4E+03	--	--	9.0E+01	2.9E+03	--	--	--	--	--	--	--	--	--	--	**9.0E+01**	**2.9E+03**
Butylbenzylphthalate	0	--	--	1.5E+03	1.9E+03	--	--	1.9E+03	2.4E+03	--	--	--	--	--	--	--	--	--	--	**1.9E+03**	**2.4E+03**
Cadmium	0	5.6E+00	1.5E+00	5.0E+00	--	5.9E+00	1.5E+00	6.4E+00	--	--	--	--	--	--	--	--	--	**5.9E+00**	**1.5E+00**	**6.4E+00**	--
Carbon Tetrachloride [C]	0	--	--	2.3E+00	1.6E+01	--	--	4.8E+00	3.4E+01	--	--	--	--	--	--	--	--	--	--	**4.8E+00**	**3.4E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	8.0E-03	8.1E-03	2.5E+00	4.6E-03	1.7E-02	1.7E-02	--	--	--	--	--	--	--	--	**2.5E+00**	**4.6E-03**	**1.7E-02**	**1.7E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	9.0E+05	2.4E+05	3.2E+05	--	--	--	--	--	--	--	--	--	**9.0E+05**	**2.4E+05**	**3.2E+05**	--
TRC	0	1.9E+01	1.1E+01	--	--	2.0E+01	1.2E+01	--	--	--	--	--	--	--	--	--	--	**2.0E+01**	**1.2E+01**	--	--
Chlorobenzene	0	--	--	1.3E+02	1.6E+03	--	--	1.7E+02	2.0E+03	--	--	--	--	--	--	--	--	--	--	**1.7E+02**	**2.0E+03**

Attachment 6

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	4.0E+00	1.3E+02	--	--	8.4E+00	2.7E+02	--	--	--	--	--	--	--	--	--	--	8.4E+00	2.7E+02
Chloroform	0	--	--	3.4E+02	1.1E+04	--	--	4.4E+02	1.4E+04	--	--	--	--	--	--	--	--	--	--	4.4E+02	1.4E+04
2-Chloronaphthalene	0	--	--	1.0E+03	1.6E+03	--	--	1.3E+03	2.0E+03	--	--	--	--	--	--	--	--	--	--	1.3E+03	2.0E+03
2-Chlorophenol	0	--	--	8.1E+01	1.5E+02	--	--	1.0E+02	1.9E+02	--	--	--	--	--	--	--	--	--	--	1.0E+02	1.9E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.7E-02	4.4E-02	--	--	--	--	--	--	--	--	--	--	8.7E-02	4.4E-02	--	--
Chromium III	0	7.4E+02	9.6E+01	--	--	7.8E+02	1.0E+02	--	--	--	--	--	--	--	--	--	--	7.8E+02	1.0E+02	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.7E+01	1.2E+01	--	--	--	--	--	--	--	--	--	--	1.7E+01	1.2E+01	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.3E+02	--	--	--	--	--	--	--	--	--	--	--	1.3E+02	--
Chrysene[C]	0	--	--	3.8E-03	1.8E-02	--	--	8.0E-03	3.8E-02	--	--	--	--	--	--	--	--	--	--	8.0E-03	3.8E-02
Copper	0	1.8E+01	1.2E+01	1.3E+03	--	1.9E+01	1.2E+01	1.7E+03	--	--	--	--	--	--	--	--	--	1.9E+01	1.2E+01	1.7E+03	--
Cyanide, Free	0	2.2E+01	5.2E+00	1.4E+02	1.6E+04	2.3E+01	5.5E+00	1.8E+02	2.0E+04	--	--	--	--	--	--	--	--	2.3E+01	5.5E+00	1.8E+02	2.0E+04
DDD[C]	0	--	--	3.1E-03	3.1E-03	--	--	6.5E-03	6.5E-03	--	--	--	--	--	--	--	--	--	--	6.5E-03	6.5E-03
DDE[C]	0	--	--	2.2E-03	2.2E-03	--	--	4.6E-03	4.6E-03	--	--	--	--	--	--	--	--	--	--	4.6E-03	4.6E-03
DDT[C]	0	1.1E+00	1.0E-03	2.2E-03	2.2E-03	1.2E+00	1.1E-03	4.6E-03	4.6E-03	--	--	--	--	--	--	--	--	1.2E+00	1.1E-03	4.6E-03	4.6E-03
Demeton	0	--	1.0E-01	--	--	--	1.1E-01	--	--	--	--	--	--	--	--	--	--	--	1.1E-01	--	--
Diazinon	0	1.7E-01	1.7E-01	--	--	1.8E-01	1.8E-01	--	--	--	--	--	--	--	--	--	--	1.8E-01	1.8E-01	--	--
Dibenz(a,h)anthracene[C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	8.0E-02	3.8E-01
1,2-Dichlorobenzene	0	--	--	4.2E+02	1.3E+03	--	--	5.4E+02	1.7E+03	--	--	--	--	--	--	--	--	--	--	5.4E+02	1.7E+03
1,3-Dichlorobenzene	0	--	--	3.2E+02	9.6E+02	--	--	4.1E+02	1.2E+03	--	--	--	--	--	--	--	--	--	--	4.1E+02	1.2E+03
1,4-Dichlorobenzene	0	--	--	6.3E+01	1.9E+02	--	--	8.1E+01	2.4E+02	--	--	--	--	--	--	--	--	--	--	8.1E+01	2.4E+02
3,3-Dichlorobenzidine[C]	0	--	--	2.1E-01	2.8E-01	--	--	4.4E-01	5.9E-01	--	--	--	--	--	--	--	--	--	--	4.4E-01	5.9E-01
Dichlorobromomethane[C]	0	--	--	5.5E+00	1.7E+02	--	--	1.2E+01	3.6E+02	--	--	--	--	--	--	--	--	--	--	1.2E+01	3.6E+02
1,2-Dichloroethane[C]	0	--	--	3.8E+00	3.7E+02	--	--	8.0E+00	7.8E+02	--	--	--	--	--	--	--	--	--	--	8.0E+00	7.8E+02
1,1-Dichloroethylene	0	--	--	3.3E+02	7.1E+03	--	--	4.2E+02	9.1E+03	--	--	--	--	--	--	--	--	--	--	4.2E+02	9.1E+03
1,2-trans-dichloroethylene	0	--	--	1.4E+02	1.0E+04	--	--	1.8E+02	1.3E+04	--	--	--	--	--	--	--	--	--	--	1.8E+02	1.3E+04
2,4-Dichlorophenol	0	--	--	7.7E+01	2.9E+02	--	--	9.9E+01	3.7E+02	--	--	--	--	--	--	--	--	--	--	9.9E+01	3.7E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.3E+02	--	--	--	--	--	--	--	--	--	--	--	1.3E+02	--
1,2-Dichloropropane[C]	0	--	--	5.0E+00	1.5E+02	--	--	1.0E+01	3.1E+02	--	--	--	--	--	--	--	--	--	--	1.0E+01	3.1E+02
1,3-Dichloropropene[C]	0	--	--	3.4E+00	2.1E+02	--	--	7.1E+00	4.4E+02	--	--	--	--	--	--	--	--	--	--	7.1E+00	4.4E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	5.2E-04	5.4E-04	2.5E-01	5.9E-02	1.1E-03	1.1E-03	--	--	--	--	--	--	--	--	2.5E-01	5.9E-02	1.1E-03	1.1E-03
Diethyl Phthalate	0	--	--	1.7E+04	4.4E+04	--	--	2.2E+04	5.6E+04	--	--	--	--	--	--	--	--	--	--	2.2E+04	5.6E+04
2,4-Dimethylphenol	0	--	--	3.8E+02	8.5E+02	--	--	4.9E+02	1.1E+03	--	--	--	--	--	--	--	--	--	--	4.9E+02	1.1E+03
Dimethyl Phthalate	0	--	--	2.7E+05	1.1E+06	--	--	3.5E+05	1.4E+06	--	--	--	--	--	--	--	--	--	--	3.5E+05	1.4E+06
Di-n-Butyl Phthalate	0	--	--	2.0E+03	4.5E+03	--	--	2.6E+03	5.8E+03	--	--	--	--	--	--	--	--	--	--	2.6E+03	5.8E+03
2,4 Dinitrophenol	0	--	--	6.9E+01	5.3E+03	--	--	8.8E+01	6.8E+03	--	--	--	--	--	--	--	--	--	--	8.8E+01	6.8E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	2.8E+02	--	--	1.7E+01	3.6E+02	--	--	--	--	--	--	--	--	--	--	1.7E+01	3.6E+02
2,4-Dinitrotoluene[C]	0	--	--	1.1E+00	3.4E+01	--	--	2.3E+00	7.1E+01	--	--	--	--	--	--	--	--	--	--	2.3E+00	7.1E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.0E-08	5.1E-08	--	--	6.4E-08	6.5E-08	--	--	--	--	--	--	--	--	--	--	6.4E-08	6.5E-08
1,2-Diphenylhydrazine[C]	0	--	--	3.6E-01	2.0E+00	--	--	7.6E-01	4.2E+00	--	--	--	--	--	--	--	--	--	--	7.6E-01	4.2E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.3E-01	5.9E-02	7.9E+01	1.1E+02	--	--	--	--	--	--	--	--	2.3E-01	5.9E-02	7.9E+01	1.1E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.3E-01	5.9E-02	7.9E+01	1.1E+02	--	--	--	--	--	--	--	--	2.3E-01	5.9E-02	7.9E+01	1.1E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.3E-01	5.9E-02	--	--	--	--	--	--	--	--	--	--	2.3E-01	5.9E-02	--	--
Endosulfan Sulfate	0	--	--	6.2E+01	8.9E+01	--	--	7.9E+01	1.1E+02	--	--	--	--	--	--	--	--	--	--	7.9E+01	1.1E+02
Endrin	0	8.6E-02	3.6E-02	5.9E-02	6.0E-02	9.0E-02	3.8E-02	7.6E-02	7.7E-02	--	--	--	--	--	--	--	--	9.0E-02	3.8E-02	7.6E-02	7.7E-02
Endrin Aldehyde	0	--	--	2.9E-01	3.0E-01	--	--	3.7E-01	3.8E-01	--	--	--	--	--	--	--	--	--	--	3.7E-01	3.8E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	5.3E+02	2.1E+03	--	--	6.8E+02	2.7E+03	--	--	--	--	--	--	--	--	--	--	**6.8E+02**	**2.7E+03**
Fluoranthene	0	--	--	1.3E+02	1.4E+02	--	--	1.7E+02	1.8E+02	--	--	--	--	--	--	--	--	--	--	**1.7E+02**	**1.8E+02**
Fluorene	0	--	--	1.1E+03	5.3E+03	--	--	1.4E+03	6.8E+03	--	--	--	--	--	--	--	--	--	--	**1.4E+03**	**6.8E+03**
Foaming Agents	0	--	--	5.0E+02	--	--	--	6.4E+02	--	--	--	--	--	--	--	--	--	--	--	**6.4E+02**	--
Guthion	0	--	1.0E-02	--	--	--	1.1E-02	--	--	--	--	--	--	--	--	--	--	--	**1.1E-02**	--	--
Heptachlor [C]	0	5.2E-01	3.8E-03	7.9E-04	7.9E-04	5.5E-01	4.0E-03	1.7E-03	1.7E-03	--	--	--	--	--	--	--	--	**5.5E-01**	**4.0E-03**	**1.7E-03**	**1.7E-03**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	3.9E-04	3.9E-04	5.5E-01	4.0E-03	8.2E-04	8.2E-04	--	--	--	--	--	--	--	--	**5.5E-01**	**4.0E-03**	**8.2E-04**	**8.2E-04**
Hexachlorobenzene [C]	0	--	--	2.8E-03	2.9E-03	--	--	5.9E-03	6.1E-03	--	--	--	--	--	--	--	--	--	--	**5.9E-03**	**6.1E-03**
Hexachlorobutadiene [C]	0	--	--	4.4E+00	1.8E+02	--	--	9.2E+00	3.8E+02	--	--	--	--	--	--	--	--	--	--	**9.2E+00**	**3.8E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	2.6E-02	4.9E-02	--	--	5.5E-02	1.0E-01	--	--	--	--	--	--	--	--	--	--	**5.5E-02**	**1.0E-01**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	9.1E-02	1.7E-01	--	--	1.9E-01	3.6E-01	--	--	--	--	--	--	--	--	--	--	**1.9E-01**	**3.6E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	--	9.8E-01	1.8E+00	1.0E+00	--	2.1E+00	3.8E+00	--	--	--	--	--	--	--	--	**1.0E+00**	--	**2.1E+00**	**3.8E+00**
Hexachlorocyclopentadiene	0	--	--	4.0E+01	1.1E+03	--	--	5.1E+01	1.4E+03	--	--	--	--	--	--	--	--	--	--	**5.1E+01**	**1.4E+03**
Hexachloroethane [C]	0	--	--	1.4E+01	3.3E+01	--	--	2.9E+01	6.9E+01	--	--	--	--	--	--	--	--	--	--	**2.9E+01**	**6.9E+01**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.1E+00	--	--	--	--	--	--	--	--	--	--	--	**2.1E+00**	--	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	8.0E-02	3.8E-01	--	--	--	--	--	--	--	--	--	--	**8.0E-02**	**3.8E-01**
Iron	0	--	--	3.0E+02	--	--	--	3.8E+02	--	--	--	--	--	--	--	--	--	--	--	**3.8E+02**	--
Isophorone [C]	0	--	--	3.5E+02	9.6E+03	--	--	7.3E+02	2.0E+04	--	--	--	--	--	--	--	--	--	--	**7.3E+02**	**2.0E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	--	--
Lead	0	1.8E+02	2.0E+01	1.5E+01	--	1.9E+02	2.2E+01	1.9E+01	--	--	--	--	--	--	--	--	--	**1.9E+02**	**2.2E+01**	**1.9E+01**	--
Malathion	0	--	1.0E-01	--	--	--	1.1E-01	--	--	--	--	--	--	--	--	--	--	--	**1.1E-01**	--	--
Manganese	0	--	--	5.0E+01	--	--	--	6.4E+01	--	--	--	--	--	--	--	--	--	--	--	**6.4E+01**	--
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.5E+00	8.2E-01	- -	- -	--	--	--	--	--	--	--	--	**1.5E+00**	**8.2E-01**	- -	- -
Methyl Bromide	0	--	--	4.7E+01	1.5E+03	--	--	6.0E+01	1.9E+03	--	--	--	--	--	--	--	--	--	--	**6.0E+01**	**1.9E+03**
Methylene Chloride [C]	0	--	--	4.6E+01	5.9E+03	--	--	9.7E+01	1.2E+04	--	--	--	--	--	--	--	--	--	--	**9.7E+01**	**1.2E+04**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.2E-02	1.3E+02	--	--	--	--	--	--	--	--	--	--	**3.2E-02**	**1.3E+02**	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	--	--
Nickel	0	2.4E+02	2.7E+01	6.1E+02	4.6E+03	2.5E+02	2.8E+01	7.8E+02	5.9E+03	--	--	--	--	--	--	--	--	**2.5E+02**	**2.8E+01**	**7.8E+02**	**5.9E+03**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.3E+04	--	--	--	--	--	--	--	--	--	--	--	**1.3E+04**	--
Nitrobenzene	0	--	--	1.7E+01	6.9E+02	--	--	2.2E+01	8.8E+02	--	--	--	--	--	--	--	--	--	--	**2.2E+01**	**8.8E+02**
N-Nitrosodimethylamine [C]	0	--	--	6.9E-03	3.0E+01	--	--	1.4E-02	6.3E+01	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	**6.3E+01**
N-Nitrosodiphenylamine [C]	0	--	--	3.3E+01	6.0E+01	--	--	6.9E+01	1.3E+02	--	--	--	--	--	--	--	--	--	--	**6.9E+01**	**1.3E+02**
N-Nitrosodi-n-propylamine [C]	0	--	--	5.0E-02	5.1E+00	--	--	1.0E-01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	**1.1E+01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.9E+01	7.0E+00	--	--	--	--	--	--	--	--	--	--	**2.9E+01**	**7.0E+00**	--	--
Parathion	0	6.5E-02	1.3E-02	--	--	6.8E-02	1.4E-02	--	--	--	--	--	--	--	--	--	--	**6.8E-02**	**1.4E-02**	--	--
PCB Total [C]	0	--	1.4E-02	6.4E-04	6.4E-04	--	1.5E-02	1.3E-03	1.3E-03	--	--	--	--	--	--	--	--	--	**1.5E-02**	**1.3E-03**	**1.3E-03**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	2.7E+00	3.0E+01	8.1E-03	6.3E-03	5.7E+00	6.3E+01	--	--	--	--	--	--	--	--	**8.1E-03**	**6.3E-03**	**5.7E+00**	**6.3E+01**
Phenol	0	--	--	1.0E+04	8.6E+05	--	--	1.3E+04	1.1E+06	--	--	--	--	--	--	--	--	--	--	**1.3E+04**	**1.1E+06**
Pyrene	0	--	--	8.3E+02	4.0E+03	--	--	1.1E+03	5.1E+03	--	--	--	--	--	--	--	--	--	--	**1.1E+03**	**5.1E+03**
Radionuclides	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross Alpha Activity (pCi/L)	0	--	--	1.5E+01	--	--	--	1.9E+01	--	--	--	--	--	--	--	--	--	--	--	**1.9E+01**	--
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	5.1E+00	5.1E+00	--	--	--	--	--	--	--	--	--	--	**5.1E+00**	**5.1E+00**
Radium 226 + 228 (pCi/L)	0	--	--	5.0E+00	--	--	--	6.4E+00	--	--	--	--	--	--	--	--	--	--	--	**6.4E+00**	--
Uranium (ug/l)	0	--	--	3.0E+01	--	--	--	3.8E+01	--	--	--	--	--	--	--	--	--	--	--	**3.8E+01**	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	1.7E+02	4.2E+03	2.1E+01	5.3E+00	2.2E+02	5.4E+03	--	--	--	--	--	--	--	--	**2.1E+01**	**5.3E+00**	**2.2E+02**	**5.4E+03**
Silver	0	6.0E+00	--	--	--	6.3E+00	--	--	--	--	--	--	--	--	--	--	--	**6.3E+00**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	3.2E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+05**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	4.0E+01	--	--	3.6E+00	8.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.6E+00**	**8.4E+01**
Tetrachloroethylene[C]	0	--	--	6.9E+00	3.3E+01	--	--	1.4E+01	6.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E+01**	**6.9E+01**
Thallium	0	--	--	2.4E-01	4.7E-01	--	--	3.1E-01	6.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**3.1E-01**	**6.0E-01**
Toluene	0	--	--	5.1E+02	6.0E+03	--	--	6.5E+02	7.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**6.5E+02**	**7.7E+03**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	6.4E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	2.8E-03	2.8E-03	7.7E-01	2.1E-04	5.9E-03	5.9E-03	--	--	--	--	--	--	--	--	**7.7E-01**	**2.1E-04**	**5.9E-03**	**5.9E-03**
Tributyltin	0	4.6E-01	7.2E-02	--	--	4.8E-01	7.6E-02	--	--	--	--	--	--	--	--	--	--	**4.8E-01**	**7.6E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	3.5E+01	7.0E+01	--	--	4.5E+01	9.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**4.5E+01**	**9.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	5.9E+00	1.6E+02	--	--	1.2E+01	3.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+01**	**3.4E+02**
Trichloroethylene [C]	0	--	--	2.5E+01	3.0E+02	--	--	5.2E+01	6.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**5.2E+01**	**6.3E+02**
2,4,6-Trichlorophenol [C]	0	--	--	1.4E+01	2.4E+01	--	--	2.9E+01	5.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.9E+01**	**5.0E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	6.4E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E+01**	**--**
Vinyl Chloride[C]	0	--	--	2.5E-01	2.4E+01	--	--	5.2E-01	5.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**5.2E-01**	**5.0E+01**
Zinc	0	1.5E+02	1.5E+02	7.4E+03	2.6E+04	1.6E+02	1.6E+02	9.5E+03	3.3E+04	--	--	--	--	--	--	--	--	**1.6E+02**	**1.6E+02**	**9.5E+03**	**3.3E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	7.2E+00
Arsenic	1.3E+01
Barium	2.6E+03
Cadmium	9.3E-01
Chromium III	6.1E+01
Chromium VI	6.7E+00
Copper	7.5E+00
Iron	3.8E+02
Lead	1.3E+01
Manganese	6.4E+01
Mercury	4.9E-01
Nickel	1.7E+01
Selenium	3.2E+00
Silver	2.5E+00
Zinc	6.5E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Broad Run WRF 11 MGD Permit No.: VA0091383

Receiving Stream: Broad Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	100 mg/L	1Q10 (Annual) =	0.28 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	140 mg/L
90% Temperature (Annual) =	23 deg C	7Q10 (Annual) =	0.34 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	24.25 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0.82 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	7.9 SU	1Q10 (Wet season) =	2.69 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.2 SU
10% Maximum pH =	SU	30Q10 (Wet season)	6.59 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	1.54 MGD			Discharge Flow =	11 MGD
Public Water Supply (PWS) Y/N? =	y	Harmonic Mean =	6.04 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	6.7E+02	9.9E+02	--	--	7.6E+02	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**7.6E+02**	**1.1E+03**
Acrolein	0	--	--	6.1E+00	9.3E+00	--	--	7.0E+00	1.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**7.0E+00**	**1.1E+01**
Acrylonitrile[C]	0	--	--	5.1E-01	2.5E+00	--	--	7.9E-01	3.9E+00	--	--	--	--	--	--	--	--	**--**	**--**	**7.9E-01**	**3.9E+00**
Aldrin [C]	0	3.0E+00	--	4.9E-04	5.0E-04	3.1E+00	--	7.6E-04	7.7E-04	--	--	--	--	--	--	--	--	**3.1E+00**	**--**	**7.6E-04**	**7.7E-04**
Ammonia-N (mg/l) (Yearly)	0	2.92E+01	2.85E+00	--	--	3.0E+01	3.1E+00	--	--	--	--	--	--	--	--	--	--	**3.0E+01**	**3.1E+00**	**--**	**--**
Ammonia-N (mg/l) (High Flow)	0	2.71E+01	4.89E+00	--	--	3.4E+01	7.8E+00	--	--	--	--	--	--	--	--	--	--	**3.4E+01**	**7.8E+00**	**--**	**--**
Anthracene	0	--	--	8.3E+03	4.0E+04	--	--	9.5E+03	4.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**9.5E+03**	**4.6E+04**
Antimony	0	--	--	5.6E+00	6.4E+02	--	--	6.4E+00	7.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E+00**	**7.3E+02**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	3.5E+02	1.5E+02	1.1E+01	--	--	--	--	--	--	--	--	--	**3.5E+02**	**1.5E+02**	**1.1E+01**	**--**
Barium	0	--	--	2.0E+03	--	--	--	2.3E+03	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.3E+03**	**--**
Benzene [C]	0	--	--	2.2E+01	5.1E+02	--	--	3.4E+01	7.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.4E+01**	**7.9E+02**
Benzidine[C]	0	--	--	8.6E-04	2.0E-03	--	--	1.3E-03	3.1E-03	--	--	--	--	--	--	--	--	**--**	**--**	**1.3E-03**	**3.1E-03**
Benzo (a) anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-02**	**2.8E-01**
Benzo (b) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-02**	**2.8E-01**
Benzo (k) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-02**	**2.8E-01**
Benzo (a) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-02**	**2.8E-01**
Bis2-Chloroethyl Ether[C]	0	--	--	3.0E-01	5.3E+00	--	--	4.6E-01	8.2E+00	--	--	--	--	--	--	--	--	**--**	**--**	**4.6E-01**	**8.2E+00**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	6.5E+04	--	--	1.6E+03	7.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**1.6E+03**	**7.4E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	1.2E+01	2.2E+01	--	--	1.9E+01	3.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.9E+01**	**3.4E+01**
Bromoform [C]	0	--	--	4.3E+01	1.4E+03	--	--	6.7E+01	2.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**6.7E+01**	**2.2E+03**
Butylbenzylphthalate	0	--	--	1.5E+03	1.9E+03	--	--	1.7E+03	2.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+03**	**2.2E+03**
Cadmium	0	5.7E+00	1.5E+00	5.0E+00	--	5.8E+00	1.5E+00	5.7E+00	--	--	--	--	--	--	--	--	--	**5.8E+00**	**1.5E+00**	**5.7E+00**	**--**
Carbon Tetrachloride [C]	0	--	--	2.3E+00	1.6E+01	--	--	3.6E+00	2.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.6E+00**	**2.5E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	8.0E-03	8.1E-03	2.5E+00	4.4E-03	1.2E-02	1.3E-02	--	--	--	--	--	--	--	--	**2.5E+00**	**4.4E-03**	**1.2E-02**	**1.3E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	8.8E+05	2.4E+05	2.9E+05	--	--	--	--	--	--	--	--	--	**8.8E+05**	**2.4E+05**	**2.9E+05**	**--**
TRC	0	1.9E+01	1.1E+01	--	--	1.9E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**--**	**--**
Chlorobenzene	0	--	--	1.3E+02	1.6E+03	--	--	1.5E+02	1.8E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.5E+02**	**1.8E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	4.0E+00	1.3E+02	--	--	6.2E+00	2.0E+02	--	--	--	--	--	--	--	--	--	--	**6.2E+00**	**2.0E+02**
Chloroform	0	--	--	3.4E+02	1.1E+04	--	--	3.9E+02	1.3E+04	--	--	--	--	--	--	--	--	--	--	**3.9E+02**	**1.3E+04**
2-Chloronaphthalene	0	--	--	1.0E+03	1.6E+03	--	--	1.1E+03	1.8E+03	--	--	--	--	--	--	--	--	--	--	**1.1E+03**	**1.8E+03**
2-Chlorophenol	0	--	--	8.1E+01	1.5E+02	--	--	9.2E+01	1.7E+02	--	--	--	--	--	--	--	--	--	--	**9.2E+01**	**1.7E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.5E-02	4.2E-02	--	--	--	--	--	--	--	--	--	--	**8.5E-02**	**4.2E-02**	--	--
Chromium III	0	7.5E+02	9.7E+01	--	--	7.7E+02	1.0E+02	--	--	--	--	--	--	--	--	--	--	**7.7E+02**	**1.0E+02**	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.6E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.1E+02	--	--	--	--	--	--	--	--	--	--	--	**1.1E+02**	--
Chrysene[C]	0	--	--	3.8E-03	1.8E-02	--	--	5.9E-03	2.8E-02	--	--	--	--	--	--	--	--	--	--	**5.9E-03**	**2.8E-02**
Copper	0	1.8E+01	1.2E+01	1.3E+03	--	1.9E+01	1.2E+01	1.5E+03	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.2E+01**	1.5E+03	--
Cyanide, Free	0	2.2E+01	5.2E+00	1.4E+02	1.6E+04	2.3E+01	5.4E+00	1.6E+02	1.8E+04	--	--	--	--	--	--	--	--	**2.3E+01**	**5.4E+00**	**1.6E+02**	**1.8E+04**
DDD[C]	0	--	--	3.1E-03	3.1E-03	--	--	4.8E-03	4.8E-03	--	--	--	--	--	--	--	--	--	--	**4.8E-03**	**4.8E-03**
DDE[C]	0	--	--	2.2E-03	2.2E-03	--	--	3.4E-03	3.4E-03	--	--	--	--	--	--	--	--	--	--	**3.4E-03**	**3.4E-03**
DDT[C]	0	1.1E+00	1.0E-03	2.2E-03	2.2E-03	1.1E+00	1.0E-03	3.4E-03	3.4E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**3.4E-03**	**3.4E-03**
Demeton	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	--	--
Diazinon	0	1.7E-01	1.7E-01	--	--	1.7E-01	1.8E-01	--	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.8E-01**	--	--
Dibenz(a,h)anthracene[C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	--	--	**5.9E-02**	**2.8E-01**
1,2-Dichlorobenzene	0	--	--	4.2E+02	1.3E+03	--	--	4.8E+02	1.5E+03	--	--	--	--	--	--	--	--	--	--	**4.8E+02**	**1.5E+03**
1,3-Dichlorobenzene	0	--	--	3.2E+02	9.6E+02	--	--	3.6E+02	1.1E+03	--	--	--	--	--	--	--	--	--	--	**3.6E+02**	**1.1E+03**
1,4-Dichlorobenzene	0	--	--	6.3E+01	1.9E+02	--	--	7.2E+01	2.2E+02	--	--	--	--	--	--	--	--	--	--	**7.2E+01**	**2.2E+02**
3,3-Dichlorobenzidine[C]	0	--	--	2.1E-01	2.8E-01	--	--	3.3E-01	4.3E-01	--	--	--	--	--	--	--	--	--	--	**3.3E-01**	**4.3E-01**
Dichlorobromomethane[C]	0	--	--	5.5E+00	1.7E+02	--	--	8.5E+00	2.6E+02	--	--	--	--	--	--	--	--	--	--	**8.5E+00**	**2.6E+02**
1,2-Dichloroethane[C]	0	--	--	3.8E+00	3.7E+02	--	--	5.9E+00	5.7E+02	--	--	--	--	--	--	--	--	--	--	**5.9E+00**	**5.7E+02**
1,1-Dichloroethylene	0	--	--	3.3E+02	7.1E+03	--	--	3.8E+02	8.1E+03	--	--	--	--	--	--	--	--	--	--	**3.8E+02**	**8.1E+03**
1,2-trans-dichloroethylene	0	--	--	1.4E+02	1.0E+04	--	--	1.6E+02	1.1E+04	--	--	--	--	--	--	--	--	--	--	**1.6E+02**	**1.1E+04**
2,4-Dichlorophenol	0	--	--	7.7E+01	2.9E+02	--	--	8.8E+01	3.3E+02	--	--	--	--	--	--	--	--	--	--	**8.8E+01**	**3.3E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.1E+02	--	--	--	--	--	--	--	--	--	--	--	**1.1E+02**	--
1,2-Dichloropropane[C]	0	--	--	5.0E+00	1.5E+02	--	--	7.7E+00	2.3E+02	--	--	--	--	--	--	--	--	--	--	**7.7E+00**	**2.3E+02**
1,3-Dichloropropene[C]	0	--	--	3.4E+00	2.1E+02	--	--	5.3E+00	3.3E+02	--	--	--	--	--	--	--	--	--	--	**5.3E+00**	**3.3E+02**
Dieldrin[C]	0	2.4E-01	5.6E-02	5.2E-04	5.4E-04	2.5E-01	5.8E-02	8.1E-04	8.4E-04	--	--	--	--	--	--	--	--	**2.5E-01**	**5.8E-02**	**8.1E-04**	**8.4E-04**
Diethyl Phthalate	0	--	--	1.7E+04	4.4E+04	--	--	1.9E+04	5.0E+04	--	--	--	--	--	--	--	--	--	--	**1.9E+04**	**5.0E+04**
2,4-Dimethylphenol	0	--	--	3.8E+02	8.5E+02	--	--	4.3E+02	9.7E+02	--	--	--	--	--	--	--	--	--	--	**4.3E+02**	**9.7E+02**
Dimethyl Phthalate	0	--	--	2.7E+05	1.1E+06	--	--	3.1E+05	1.3E+06	--	--	--	--	--	--	--	--	--	--	**3.1E+05**	**1.3E+06**
Di-n-Butyl Phthalate	0	--	--	2.0E+03	4.5E+03	--	--	2.3E+03	5.1E+03	--	--	--	--	--	--	--	--	--	--	**2.3E+03**	**5.1E+03**
2,4 Dinitrophenol	0	--	--	6.9E+01	5.3E+03	--	--	7.9E+01	6.0E+03	--	--	--	--	--	--	--	--	--	--	**7.9E+01**	**6.0E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	2.8E+02	--	--	1.5E+01	3.2E+02	--	--	--	--	--	--	--	--	--	--	**1.5E+01**	**3.2E+02**
2,4-Dinitrotoluene[C]	0	--	--	1.1E+00	3.4E+01	--	--	1.7E+00	5.3E+01	--	--	--	--	--	--	--	--	--	--	**1.7E+00**	**5.3E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.0E-08	5.1E-08	--	--	5.7E-08	5.8E-08	--	--	--	--	--	--	--	--	--	--	**5.7E-08**	**5.8E-08**
1,2-Diphenylhydrazine[C]	0	--	--	3.6E-01	2.0E+00	--	--	5.6E-01	3.1E+00	--	--	--	--	--	--	--	--	--	--	**5.6E-01**	**3.1E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.3E-01	5.8E-02	7.1E+01	1.0E+02	--	--	--	--	--	--	--	--	**2.3E-01**	**5.8E-02**	**7.1E+01**	**1.0E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.3E-01	5.8E-02	7.1E+01	1.0E+02	--	--	--	--	--	--	--	--	**2.3E-01**	**5.8E-02**	**7.1E+01**	**1.0E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.3E-01	5.8E-02	--	--	--	--	--	--	--	--	--	--	**2.3E-01**	**5.8E-02**	--	--
Endosulfan Sulfate	0	--	--	6.2E+01	8.9E+01	--	--	7.1E+01	1.0E+02	--	--	--	--	--	--	--	--	--	--	**7.1E+01**	**1.0E+02**
Endrin	0	8.6E-02	3.6E-02	5.9E-02	6.0E-02	8.8E-02	3.7E-02	6.7E-02	6.8E-02	--	--	--	--	--	--	--	--	**8.8E-02**	**3.7E-02**	**6.7E-02**	**6.8E-02**
Endrin Aldehyde	0	--	--	2.9E-01	3.0E-01	--	--	3.3E-01	3.4E-01	--	--	--	--	--	--	--	--	--	--	**3.3E-01**	**3.4E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	5.3E+02	2.1E+03	--	--	6.0E+02	2.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**6.0E+02**	**2.4E+03**
Fluoranthene	0	--	--	1.3E+02	1.4E+02	--	--	1.5E+02	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.5E+02**	**1.6E+02**
Fluorene	0	--	--	1.1E+03	5.3E+03	--	--	1.3E+03	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.3E+03**	**6.0E+03**
Foaming Agents	0	--	--	5.0E+02	--	--	--	5.7E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+02**	**--**
Guthion	0	--	1.0E-02	--	--	--	1.0E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**--**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	7.9E-04	7.9E-04	5.3E-01	3.9E-03	1.2E-03	1.2E-03	--	--	--	--	--	--	--	--	**5.3E-01**	**3.9E-03**	**1.2E-03**	**1.2E-03**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	3.9E-04	3.9E-04	5.3E-01	3.9E-03	6.0E-04	6.0E-04	--	--	--	--	--	--	--	--	**5.3E-01**	**3.9E-03**	**6.0E-04**	**6.0E-04**
Hexachlorobenzene [C]	0	--	--	2.8E-03	2.9E-03	--	--	4.3E-03	4.5E-03	--	--	--	--	--	--	--	--	**--**	**--**	**4.3E-03**	**4.5E-03**
Hexachlorobutadiene [C]	0	--	--	4.4E+00	1.8E+02	--	--	6.8E+00	2.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**6.8E+00**	**2.8E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	2.6E-02	4.9E-02	--	--	4.0E-02	7.6E-02	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E-02**	**7.6E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	9.1E-02	1.7E-01	--	--	1.4E-01	2.6E-01	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E-01**	**2.6E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	--	9.8E-01	1.8E+00	9.7E-01	--	1.5E+00	2.8E+00	--	--	--	--	--	--	--	--	**9.7E-01**	**--**	**1.5E+00**	**2.8E+00**
Hexachlorocyclopentadiene	0	--	--	4.0E+01	1.1E+03	--	--	4.6E+01	1.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.6E+01**	**1.3E+03**
Hexachloroethane [C]	0	--	--	1.4E+01	3.3E+01	--	--	2.2E+01	5.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.2E+01**	**5.1E+01**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.1E+00	--	--	--	--	--	--	--	--	--	--	**--**	**2.1E+00**	**--**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	5.9E-02	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E-02**	**2.8E-01**
Iron	0	--	--	3.0E+02	--	--	--	3.4E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.4E+02**	**--**
Isophorone [C]	0	--	--	3.5E+02	9.6E+03	--	--	5.4E+02	1.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+02**	**1.5E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Lead	0	1.8E+02	2.1E+01	1.5E+01	--	1.9E+02	2.1E+01	1.7E+01	--	--	--	--	--	--	--	--	--	**1.9E+02**	**2.1E+01**	**1.7E+01**	**--**
Malathion	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**--**	**--**
Manganese	0	--	--	5.0E+01	--	--	--	5.7E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+01**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.9E-01	- -	- -	--	--	--	--	--	--	--	--	**1.4E+00**	**7.9E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	4.7E+01	1.5E+03	--	--	5.4E+01	1.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+01**	**1.7E+03**
Methylene Chloride [C]	0	--	--	4.6E+01	5.9E+03	--	--	7.1E+01	9.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**7.1E+01**	**9.1E+03**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.1E-02	1.1E+02	--	--	--	--	--	--	--	--	--	**--**	**3.1E-02**	**1.1E+02**	**--**
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Nickel	0	2.4E+02	2.7E+01	6.1E+02	4.6E+03	2.5E+02	2.8E+01	7.0E+02	5.2E+03	--	--	--	--	--	--	--	--	**2.5E+02**	**2.8E+01**	**7.0E+02**	**5.2E+03**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.1E+04	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+04**	**--**
Nitrobenzene	0	--	--	1.7E+01	6.9E+02	--	--	1.9E+01	7.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.9E+01**	**7.9E+02**
N-Nitrosodimethylamine [C]	0	--	--	6.9E-03	3.0E+01	--	--	1.1E-02	4.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E-02**	**4.6E+01**
N-Nitrosodiphenylamine [C]	0	--	--	3.3E+01	6.0E+01	--	--	5.1E+01	9.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**5.1E+01**	**9.3E+01**
N-Nitrosodi-n-propylamine [C]	0	--	--	5.0E-02	5.1E+00	--	--	7.7E-02	7.9E+00	--	--	--	--	--	--	--	--	**--**	**--**	**7.7E-02**	**7.9E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.9E+01	6.8E+00	--	--	--	--	--	--	--	--	--	--	**2.9E+01**	**6.8E+00**	**--**	**--**
Parathion	0	6.5E-02	1.3E-02	--	--	6.7E-02	1.3E-02	--	--	--	--	--	--	--	--	--	--	**6.7E-02**	**1.3E-02**	**--**	**--**
PCB Total [C]	0	--	1.4E-02	6.4E-04	6.4E-04	--	1.4E-02	9.9E-04	9.9E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**9.9E-04**	**9.9E-04**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	2.7E+00	3.0E+01	7.9E-03	6.1E-03	4.2E+00	4.6E+01	--	--	--	--	--	--	--	--	**7.9E-03**	**6.1E-03**	**4.2E+00**	**4.6E+01**
Phenol	0	--	--	1.0E+04	8.6E+05	--	--	1.1E+04	9.8E+05	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+04**	**9.8E+05**
Pyrene	0	--	--	8.3E+02	4.0E+03	--	--	9.5E+02	4.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**9.5E+02**	**4.6E+03**
Radionuclides	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	1.5E+01	--	--	--	1.7E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.7E+01**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	4.6E+00	4.6E+00	--	--	--	--	--	--	--	--	**--**	**--**	**4.6E+00**	**4.6E+00**
Radium 226 + 228 (pCi/L)	0	--	--	5.0E+00	--	--	--	5.7E+00	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+00**	**--**
Uranium (ug/l)	0	--	--	3.0E+01	--	--	--	3.4E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.4E+01**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	1.7E+02	4.2E+03	2.1E+01	5.2E+00	1.9E+02	4.8E+03	--	--	--	--	--	--	--	--	**2.1E+01**	**5.2E+00**	**1.9E+02**	**4.8E+03**
Silver	0	6.1E+00	--	--	--	6.2E+00	--	--	--	--	--	--	--	--	--	--	--	**6.2E+00**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	2.9E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.9E+05**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	4.0E+01	--	--	2.6E+00	6.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.6E+00**	**6.2E+01**
Tetrachloroethylene[C]	0	--	--	6.9E+00	3.3E+01	--	--	1.1E+01	5.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+01**	**5.1E+01**
Thallium	0	--	--	2.4E-01	4.7E-01	--	--	2.7E-01	5.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E-01**	**5.4E-01**
Toluene	0	--	--	5.1E+02	6.0E+03	--	--	5.8E+02	6.8E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.8E+02**	**6.8E+03**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	5.7E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	2.8E-03	2.8E-03	7.5E-01	2.1E-04	4.3E-03	4.3E-03	--	--	--	--	--	--	--	--	**7.5E-01**	**2.1E-04**	**4.3E-03**	**4.3E-03**
Tributyltin	0	4.6E-01	7.2E-02	--	--	4.7E-01	7.4E-02	--	--	--	--	--	--	--	--	--	--	**4.7E-01**	**7.4E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	3.5E+01	7.0E+01	--	--	4.0E+01	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**4.0E+01**	**8.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	5.9E+00	1.6E+02	--	--	9.1E+00	2.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**9.1E+00**	**2.5E+02**
Trichloroethylene [C]	0	--	--	2.5E+01	3.0E+02	--	--	3.9E+01	4.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.9E+01**	**4.6E+02**
2,4,6-Trichlorophenol [C]	0	--	--	1.4E+01	2.4E+01	--	--	2.2E+01	3.7E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.2E+01**	**3.7E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	5.7E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+01**	**--**
Vinyl Chloride[C]	0	--	--	2.5E-01	2.4E+01	--	--	3.9E-01	3.7E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.9E-01**	**3.7E+01**
Zinc	0	1.5E+02	1.6E+02	7.4E+03	2.6E+04	1.6E+02	1.6E+02	8.4E+03	3.0E+04	--	--	--	--	--	--	--	--	**1.6E+02**	**1.6E+02**	**8.4E+03**	**3.0E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+00
Arsenic	1.1E+01
Barium	2.3E+03
Cadmium	9.1E-01
Chromium III	6.0E+01
Chromium VI	6.6E+00
Copper	7.3E+00
Iron	3.4E+02
Lead	1.3E+01
Manganese	5.7E+01
Mercury	4.8E-01
Nickel	1.7E+01
Selenium	3.1E+00
Silver	2.5E+00
Zinc	6.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Broad Run WRF 22 MGD Permit No.: VA0091383

Receiving Stream: Broad Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	100	mg/L	1Q10 (Annual) =	0.28	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	140	mg/L
90% Temperature (Annual) =	23	deg C	7Q10 (Annual) =	0.34	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	24.25	deg C
90% Temperature (Wet season) =		deg C	30Q10 (Annual) =	0.82	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =		deg C
90% Maximum pH =	7.9	SU	1Q10 (Wet season) =	2.69	MGD	Wet Season - 1Q10 Mix =	100	%	90% Maximum pH =	7.2	SU
10% Maximum pH =		SU	30Q10 (Wet season)	6.59	MGD	- 30Q10 Mix =	100	%	10% Maximum pH =		SU
Tier Designation (1 or 2) =	1		30Q5 =	1.54	MGD				Discharge Flow =	22	MGD
Public Water Supply (PWS) Y/N? =	y		Harmonic Mean =	6.04	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	6.7E+02	9.9E+02	--	--	7.2E+02	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**7.2E+02**	**1.1E+03**
Acrolein	0	--	--	6.1E+00	9.3E+00	--	--	6.5E+00	1.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**6.5E+00**	**1.0E+01**
Acrylonitrile[C]	0	--	--	5.1E-01	2.5E+00	--	--	6.5E-01	3.2E+00	--	--	--	--	--	--	--	--	**--**	**--**	**6.5E-01**	**3.2E+00**
Aldrin [C]	0	3.0E+00	--	4.9E-04	5.0E-04	3.0E+00	--	6.2E-04	6.4E-04	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**6.2E-04**	**6.4E-04**
Ammonia-N (mg/l) (Yearly)	0	2.94E+01	2.87E+00	--	--	3.0E+01	3.0E+00	--	--	--	--	--	--	--	--	--	--	**3.0E+01**	**3.0E+00**	**--**	**--**
Ammonia-N (mg/l) (High Flow)	0	2.82E+01	5.11E+00	--	--	3.2E+01	6.6E+00	--	--	--	--	--	--	--	--	--	--	**3.2E+01**	**6.6E+00**	**--**	**--**
Anthracene	0	--	--	8.3E+03	4.0E+04	--	--	8.9E+03	4.3E+04	--	--	--	--	--	--	--	--	**--**	**--**	**8.9E+03**	**4.3E+04**
Antimony	0	--	--	5.6E+00	6.4E+02	--	--	6.0E+00	6.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**6.0E+00**	**6.8E+02**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	3.4E+02	1.5E+02	1.1E+01	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**1.1E+01**	**--**
Barium	0	--	--	2.0E+03	--	--	--	2.1E+03	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.1E+03**	**--**
Benzene [C]	0	--	--	2.2E+01	5.1E+02	--	--	2.8E+01	6.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**2.8E+01**	**6.5E+02**
Benzidine[C]	0	--	--	8.6E-04	2.0E-03	--	--	1.1E-03	2.5E-03	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E-03**	**2.5E-03**
Benzo (a) anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E-02**	**2.3E-01**
Benzo (b) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E-02**	**2.3E-01**
Benzo (k) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E-02**	**2.3E-01**
Benzo (a) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E-02**	**2.3E-01**
Bis2-Chloroethyl Ether [C]	0	--	--	3.0E-01	5.3E+00	--	--	3.8E-01	6.8E+00	--	--	--	--	--	--	--	--	**--**	**--**	**3.8E-01**	**6.8E+00**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	6.5E+04	--	--	1.5E+03	7.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**1.5E+03**	**7.0E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	1.2E+01	2.2E+01	--	--	1.5E+01	2.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.5E+01**	**2.8E+01**
Bromoform [C]	0	--	--	4.3E+01	1.4E+03	--	--	5.5E+01	1.8E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.5E+01**	**1.8E+03**
Butylbenzylphthalate	0	--	--	1.5E+03	1.9E+03	--	--	1.6E+03	2.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.6E+03**	**2.0E+03**
Cadmium	0	5.7E+00	1.5E+00	5.0E+00	--	5.8E+00	1.5E+00	5.4E+00	--	--	--	--	--	--	--	--	--	**5.8E+00**	**1.5E+00**	**5.4E+00**	**--**
Carbon Tetrachloride [C]	0	--	--	2.3E+00	1.6E+01	--	--	2.9E+00	2.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.9E+00**	**2.0E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	8.0E-03	8.1E-03	2.4E+00	4.4E-03	1.0E-02	1.0E-02	--	--	--	--	--	--	--	--	**2.4E+00**	**4.4E-03**	**1.0E-02**	**1.0E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	8.7E+05	2.3E+05	2.7E+05	--	--	--	--	--	--	--	--	--	**8.7E+05**	**2.3E+05**	**2.7E+05**	**--**
TRC	0	1.9E+01	1.1E+01	--	--	1.9E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**--**	**--**
Chlorobenzene	0	--	--	1.3E+02	1.6E+03	--	--	1.4E+02	1.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E+02**	**1.7E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	4.0E+00	1.3E+02	--	--	5.1E+00	1.7E+02	--	--	--	--	--	--	--	--	--	--	**5.1E+00**	**1.7E+02**
Chloroform	0	--	--	3.4E+02	1.1E+04	--	--	3.6E+02	1.2E+04	--	--	--	--	--	--	--	--	--	--	**3.6E+02**	**1.2E+04**
2-Chloronaphthalene	0	--	--	1.0E+03	1.6E+03	--	--	1.1E+03	1.7E+03	--	--	--	--	--	--	--	--	--	--	**1.1E+03**	**1.7E+03**
2-Chlorophenol	0	--	--	8.1E+01	1.5E+02	--	--	8.7E+01	1.6E+02	--	--	--	--	--	--	--	--	--	--	**8.7E+01**	**1.6E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.4E-02	4.2E-02	--	--	--	--	--	--	--	--	--	--	**8.4E-02**	**4.2E-02**	--	--
Chromium III	0	7.5E+02	9.7E+01	--	--	7.6E+02	9.9E+01	--	--	--	--	--	--	--	--	--	--	**7.6E+02**	**9.9E+01**	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.6E+01	1.1E+01	--	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.1E+02	--	--	--	--	--	--	--	--	--	--	--	**1.1E+02**	--
Chrysene[C]	0	--	--	3.8E-03	1.8E-02	--	--	4.8E-03	2.3E-02	--	--	--	--	--	--	--	--	--	--	**4.8E-03**	**2.3E-02**
Copper	0	1.8E+01	1.2E+01	1.3E+03	--	1.9E+01	1.2E+01	1.4E+03	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.2E+01**	**1.4E+03**	--
Cyanide, Free	0	2.2E+01	5.2E+00	1.4E+02	1.6E+04	2.2E+01	5.3E+00	1.5E+02	1.7E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.3E+00**	**1.5E+02**	**1.7E+04**
DDD[C]	0	--	--	3.1E-03	3.1E-03	--	--	4.0E-03	4.0E-03	--	--	--	--	--	--	--	--	--	--	**4.0E-03**	**4.0E-03**
DDE[C]	0	--	--	2.2E-03	2.2E-03	--	--	2.8E-03	2.8E-03	--	--	--	--	--	--	--	--	--	--	**2.8E-03**	**2.8E-03**
DDT[C]	0	1.1E+00	1.0E-03	2.2E-03	2.2E-03	1.1E+00	1.0E-03	2.8E-03	2.8E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**2.8E-03**	**2.8E-03**
Demeton	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	--	--
Diazinon	0	1.7E-01	1.7E-01	--	--	1.7E-01	1.7E-01	--	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	--	--
Dibenz(a,h)anthracene[C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	--	--	**4.8E-02**	**2.3E-01**
1,2-Dichlorobenzene	0	--	--	4.2E+02	1.3E+03	--	--	4.5E+02	1.4E+03	--	--	--	--	--	--	--	--	--	--	**4.5E+02**	**1.4E+03**
1,3-Dichlorobenzene	0	--	--	3.2E+02	9.6E+02	--	--	3.4E+02	1.0E+03	--	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.0E+03**
1,4-Dichlorobenzene	0	--	--	6.3E+01	1.9E+02	--	--	6.7E+01	2.0E+02	--	--	--	--	--	--	--	--	--	--	**6.7E+01**	**2.0E+02**
3,3-Dichlorobenzidine[C]	0	--	--	2.1E-01	2.8E-01	--	--	2.7E-01	3.6E-01	--	--	--	--	--	--	--	--	--	--	**2.7E-01**	**3.6E-01**
Dichlorobromomethane[C]	0	--	--	5.5E+00	1.7E+02	--	--	7.0E+00	2.2E+02	--	--	--	--	--	--	--	--	--	--	**7.0E+00**	**2.2E+02**
1,2-Dichloroethane[C]	0	--	--	3.8E+00	3.7E+02	--	--	4.8E+00	4.7E+02	--	--	--	--	--	--	--	--	--	--	**4.8E+00**	**4.7E+02**
1,1-Dichloroethylene	0	--	--	3.3E+02	7.1E+03	--	--	3.5E+02	7.6E+03	--	--	--	--	--	--	--	--	--	--	**3.5E+02**	**7.6E+03**
1,2-trans-dichloroethylene	0	--	--	1.4E+02	1.0E+04	--	--	1.5E+02	1.1E+04	--	--	--	--	--	--	--	--	--	--	**1.5E+02**	**1.1E+04**
2,4-Dichlorophenol	0	--	--	7.7E+01	2.9E+02	--	--	8.2E+01	3.1E+02	--	--	--	--	--	--	--	--	--	--	**8.2E+01**	**3.1E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.1E+02	--	--	--	--	--	--	--	--	--	--	--	**1.1E+02**	--
1,2-Dichloropropane[C]	0	--	--	5.0E+00	1.5E+02	--	--	6.4E+00	1.9E+02	--	--	--	--	--	--	--	--	--	--	**6.4E+00**	**1.9E+02**
1,3-Dichloropropene[C]	0	--	--	3.4E+00	2.1E+02	--	--	4.3E+00	2.7E+02	--	--	--	--	--	--	--	--	--	--	**4.3E+00**	**2.7E+02**
Dieldrin[C]	0	2.4E-01	5.6E-02	5.2E-04	5.4E-04	2.4E-01	5.7E-02	6.6E-04	6.9E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.7E-02**	**6.6E-04**	**6.9E-04**
Diethyl Phthalate	0	--	--	1.7E+04	4.4E+04	--	--	1.8E+04	4.7E+04	--	--	--	--	--	--	--	--	--	--	**1.8E+04**	**4.7E+04**
2,4-Dimethylphenol	0	--	--	3.8E+02	8.5E+02	--	--	4.1E+02	9.1E+02	--	--	--	--	--	--	--	--	--	--	**4.1E+02**	**9.1E+02**
Dimethyl Phthalate	0	--	--	2.7E+05	1.1E+06	--	--	2.9E+05	1.2E+06	--	--	--	--	--	--	--	--	--	--	**2.9E+05**	**1.2E+06**
Di-n-Butyl Phthalate	0	--	--	2.0E+03	4.5E+03	--	--	2.1E+03	4.8E+03	--	--	--	--	--	--	--	--	--	--	**2.1E+03**	**4.8E+03**
2,4 Dinitrophenol	0	--	--	6.9E+01	5.3E+03	--	--	7.4E+01	5.7E+03	--	--	--	--	--	--	--	--	--	--	**7.4E+01**	**5.7E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	2.8E+02	--	--	1.4E+01	3.0E+02	--	--	--	--	--	--	--	--	--	--	**1.4E+01**	**3.0E+02**
2,4-Dinitrotoluene[C]	0	--	--	1.1E+00	3.4E+01	--	--	1.4E+00	4.3E+01	--	--	--	--	--	--	--	--	--	--	**1.4E+00**	**4.3E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.0E-08	5.1E-08	--	--	5.4E-08	5.5E-08	--	--	--	--	--	--	--	--	--	--	**5.4E-08**	**5.5E-08**
1,2-Diphenylhydrazine[C]	0	--	--	3.6E-01	2.0E+00	--	--	4.6E-01	2.5E+00	--	--	--	--	--	--	--	--	--	--	**4.6E-01**	**2.5E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.2E-01	5.7E-02	6.6E+01	9.5E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.7E-02**	**6.6E+01**	**9.5E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	2.2E-01	5.7E-02	6.6E+01	9.5E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.7E-02**	**6.6E+01**	**9.5E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.7E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.7E-02**	--	--
Endosulfan Sulfate	0	--	--	6.2E+01	8.9E+01	--	--	6.6E+01	9.5E+01	--	--	--	--	--	--	--	--	--	--	**6.6E+01**	**9.5E+01**
Endrin	0	8.6E-02	3.6E-02	5.9E-02	6.0E-02	8.7E-02	3.7E-02	6.3E-02	6.4E-02	--	--	--	--	--	--	--	--	**8.7E-02**	**3.7E-02**	**6.3E-02**	**6.4E-02**
Endrin Aldehyde	0	--	--	2.9E-01	3.0E-01	--	--	3.1E-01	3.2E-01	--	--	--	--	--	--	--	--	--	--	**3.1E-01**	**3.2E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	5.3E+02	2.1E+03	--	--	5.7E+02	2.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.7E+02**	**2.2E+03**
Fluoranthene	0	--	--	1.3E+02	1.4E+02	--	--	1.4E+02	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.4E+02**	**1.5E+02**
Fluorene	0	--	--	1.1E+03	5.3E+03	--	--	1.2E+03	5.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E+03**	**5.7E+03**
Foaming Agents	0	--	--	5.0E+02	--	--	--	5.4E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+02**	**--**
Guthion	0	--	1.0E-02	--	--	--	1.0E-02	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**--**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	7.9E-04	7.9E-04	5.3E-01	3.9E-03	1.0E-03	1.0E-03	--	--	--	--	--	--	--	--	**5.3E-01**	**3.9E-03**	**1.0E-03**	**1.0E-03**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	3.9E-04	3.9E-04	5.3E-01	3.9E-03	5.0E-04	5.0E-04	--	--	--	--	--	--	--	--	**5.3E-01**	**3.9E-03**	**5.0E-04**	**5.0E-04**
Hexachlorobenzene [C]	0	--	--	2.8E-03	2.9E-03	--	--	3.6E-03	3.7E-03	--	--	--	--	--	--	--	--	**--**	**--**	**3.6E-03**	**3.7E-03**
Hexachlorobutadiene [C]	0	--	--	4.4E+00	1.8E+02	--	--	5.6E+00	2.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**5.6E+00**	**2.3E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	2.6E-02	4.9E-02	--	--	3.3E-02	6.2E-02	--	--	--	--	--	--	--	--	**--**	**--**	**3.3E-02**	**6.2E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	9.1E-02	1.7E-01	--	--	1.2E-01	2.2E-01	--	--	--	--	--	--	--	--	**--**	**--**	**1.2E-01**	**2.2E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	--	9.8E-01	1.8E+00	9.6E-01	--	1.2E+00	2.3E+00	--	--	--	--	--	--	--	--	**9.6E-01**	**--**	**1.2E+00**	**2.3E+00**
Hexachlorocyclopentadiene	0	--	--	4.0E+01	1.1E+03	--	--	4.3E+01	1.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**4.3E+01**	**1.2E+03**
Hexachloroethane [C]	0	--	--	1.4E+01	3.3E+01	--	--	1.8E+01	4.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.8E+01**	**4.2E+01**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**--**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	4.8E-02	2.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**4.8E-02**	**2.3E-01**
Iron	0	--	--	3.0E+02	--	--	--	3.2E+02	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+02**	**--**
Isophorone [C]	0	--	--	3.5E+02	9.6E+03	--	--	4.5E+02	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**4.5E+02**	**1.2E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Lead	0	1.8E+02	2.1E+01	1.5E+01	--	1.8E+02	2.1E+01	1.6E+01	--	--	--	--	--	--	--	--	--	**1.8E+02**	**2.1E+01**	**1.6E+01**	**--**
Malathion	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**--**	**--**
Manganese	0	--	--	5.0E+01	--	--	--	5.4E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+01**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.8E-01	- -	- -	--	--	--	--	--	--	--	--	**1.4E+00**	**7.8E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	4.7E+01	1.5E+03	--	--	5.0E+01	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.0E+01**	**1.6E+03**
Methylene Chloride [C]	0	--	--	4.6E+01	5.9E+03	--	--	5.9E+01	7.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.9E+01**	**7.5E+03**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.0E-02	1.1E+02	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**1.1E+02**	**--**
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**--**	**--**
Nickel	0	2.4E+02	2.7E+01	6.1E+02	4.6E+03	2.4E+02	2.7E+01	6.5E+02	4.9E+03	--	--	--	--	--	--	--	--	**2.4E+02**	**2.7E+01**	**6.5E+02**	**4.9E+03**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.1E+04	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+04**	**--**
Nitrobenzene	0	--	--	1.7E+01	6.9E+02	--	--	1.8E+01	7.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**1.8E+01**	**7.4E+02**
N-Nitrosodimethylamine [C]	0	--	--	6.9E-03	3.0E+01	--	--	8.8E-03	3.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**8.8E-03**	**3.8E+01**
N-Nitrosodiphenylamine [C]	0	--	--	3.3E+01	6.0E+01	--	--	4.2E+01	7.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**4.2E+01**	**7.6E+01**
N-Nitrosodi-n-propylamine [C]	0	--	--	5.0E-02	5.1E+00	--	--	6.4E-02	6.5E+00	--	--	--	--	--	--	--	--	**--**	**--**	**6.4E-02**	**6.5E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.7E+00	--	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.7E+00**	**--**	**--**
Parathion	0	6.5E-02	1.3E-02	--	--	6.6E-02	1.3E-02	--	--	--	--	--	--	--	--	--	--	**6.6E-02**	**1.3E-02**	**--**	**--**
PCB Total [C]	0	--	1.4E-02	6.4E-04	6.4E-04	--	1.4E-02	8.2E-04	8.2E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**8.2E-04**	**8.2E-04**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	2.7E+00	3.0E+01	7.8E-03	6.0E-03	3.4E+00	3.8E+01	--	--	--	--	--	--	--	--	**7.8E-03**	**6.0E-03**	**3.4E+00**	**3.8E+01**
Phenol	0	--	--	1.0E+04	8.6E+05	--	--	1.1E+04	9.2E+05	--	--	--	--	--	--	--	--	**--**	**--**	**1.1E+04**	**9.2E+05**
Pyrene	0	--	--	8.3E+02	4.0E+03	--	--	8.9E+02	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**8.9E+02**	**4.3E+03**
Radionuclides	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	1.5E+01	--	--	--	1.6E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**1.6E+01**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	4.3E+00	4.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**4.3E+00**	**4.3E+00**
Radium 226 + 228 (pCi/L)	0	--	--	5.0E+00	--	--	--	5.4E+00	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+00**	**--**
Uranium (ug/l)	0	--	--	3.0E+01	--	--	--	3.2E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+01**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	1.7E+02	4.2E+03	2.0E+01	5.1E+00	1.8E+02	4.5E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.1E+00**	**1.8E+02**	**4.5E+03**
Silver	0	6.1E+00	--	--	--	6.2E+00	--	--	--	--	--	--	--	--	--	--	--	**6.2E+00**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	2.7E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**2.7E+05**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	4.0E+01	--	--	2.2E+00	5.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**2.2E+00**	**5.1E+01**
Tetrachloroethylene[C]	0	--	--	6.9E+00	3.3E+01	--	--	8.8E+00	4.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**8.8E+00**	**4.2E+01**
Thallium	0	--	--	2.4E-01	4.7E-01	--	--	2.6E-01	5.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**2.6E-01**	**5.0E-01**
Toluene	0	--	--	5.1E+02	6.0E+03	--	--	5.5E+02	6.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**5.5E+02**	**6.4E+03**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	5.4E+05	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	2.8E-03	2.8E-03	7.4E-01	2.0E-04	3.6E-03	3.6E-03	--	--	--	--	--	--	--	--	**7.4E-01**	**2.0E-04**	**3.6E-03**	**3.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	--	--	4.7E-01	7.3E-02	--	--	--	--	--	--	--	--	--	--	**4.7E-01**	**7.3E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	3.5E+01	7.0E+01	--	--	3.7E+01	7.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.7E+01**	**7.5E+01**
1,1,2-Trichloroethane[C]	0	--	--	5.9E+00	1.6E+02	--	--	7.5E+00	2.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**7.5E+00**	**2.0E+02**
Trichloroethylene [C]	0	--	--	2.5E+01	3.0E+02	--	--	3.2E+01	3.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E+01**	**3.8E+02**
2,4,6-Trichlorophenol [C]	0	--	--	1.4E+01	2.4E+01	--	--	1.8E+01	3.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**1.8E+01**	**3.1E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	5.4E+01	--	--	--	--	--	--	--	--	--	**--**	**--**	**5.4E+01**	**--**
Vinyl Chloride[C]	0	--	--	2.5E-01	2.4E+01	--	--	3.2E-01	3.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**3.2E-01**	**3.1E+01**
Zinc	0	1.6E+02	1.6E+02	7.4E+03	2.6E+04	1.6E+02	1.6E+02	7.9E+03	2.8E+04	--	--	--	--	--	--	--	--	**1.6E+02**	**1.6E+02**	**7.9E+03**	**2.8E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.0E+00
Arsenic	1.1E+01
Barium	2.1E+03
Cadmium	9.0E-01
Chromium III	5.9E+01
Chromium VI	6.5E+00
Copper	7.2E+00
Iron	3.2E+02
Lead	1.3E+01
Manganese	5.4E+01
Mercury	4.7E-01
Nickel	1.6E+01
Selenium	3.0E+00
Silver	2.5E+00
Zinc	6.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

VA0091383 Broad Run

pH data

7.1	7.1
6.9	6.9
7.2	7.2
7.0	7
7.2	7.2
7.0	7
7.0	7
6.8	6.8
7.0	7
7.1	7.1
6.6	6.6
7.2	7.2
6.9	6.9
6.9	6.9
7.0	7
6.7	6.7
7.0	7
6.6	6.6

7.2 90th percentile pH

Temp data

17.5	17.5
20.5	20.5
22.4	22.4
24.1	24.1
25.0	25
23.7	23.7
21.6	21.6
19.4	19.4
17.5	17.5
16.5	16.5
15.9	15.9
16.1	16.1
17.4	17.4
20.3	20.3
22.0	22
24.0	24
24.6	24.6
23.9	23.6
22.2	22.2
19.0	19

24.25 90th percentile temperature

Station ID	Collection Date Time	Temp Celcius	Field Ph	Do Probe	Specific Conductance
1ABRB002.15	07/07/87	27.6	7.39		208
1ABRB002.15	08/04/87	27.7	7.7		244
1ABRB002.15	09/01/87	22.3	8		317
1ABRB002.15	10/06/87	12.4	7.9		274
1ABRB002.15	11/17/87	9.4	7.5		254
1ABRB002.15	12/15/87	6.2	7.8		126.5
1ABRB002.15	01/12/88	0.4	8		159.8
1ABRB002.15	02/17/88	2.1	8.3		195
1ABRB002.15	03/15/88	5.9	8		228
1ABRB002.15	04/12/88	11.8	7.8		177
1ABRB002.15	05/10/88	17.8	7.4		159
1ABRB002.15	06/07/88	22.3			201
1ABRB002.15	07/06/88	23.1	8		276
1ABRB002.15	08/09/88	25.1	7.4		172.9
1ABRB002.15	09/07/88	20.5	8.3		166.8
1ABRB002.15	09/07/88				
1ABRB002.15	10/04/88	16.6	7.5		290
1ABRB002.15	11/09/88	11	8.4		257
1ABRB002.15	12/06/88	4.1	8.3		238
1ABRB002.15	01/18/89	2.6	7.4		205
1ABRB002.15	02/14/89	1.4	7.7		291
1ABRB002.15	03/21/89	5.6	7.9		147
1ABRB002.15	04/04/89	13.4			190.2
1ABRB002.15	05/02/89	15.3	7.3		117
1ABRB002.15	06/13/89	20.6			192
1ABRB002.15	07/18/89	28.1	7.8		
1ABRB002.15	08/15/89	22.6	7.7		262.4
1ABRB002.15	09/12/89	23.1	7.3		
1ABRB002.15	06/12/90	19.5	7.3		
1ABRB002.15	06/12/91	23	6.9		
1ABRB002.15	09/25/91	18.6	6.5		
1ABRB002.15	10/30/91	10.8	6.7		
1ABRB002.15	11/26/91	6.6	6.7	8.1	259
1ABRB002.15	12/11/91	6.9	6.8	10	183
1ABRB002.15	01/02/92	4.1	6.6	11.2	229
1ABRB002.15	02/03/92	1.5	7.1	12.2	248
1ABRB002.15	02/05/92	2.8	7.2	12.5	304
1ABRB002.15	03/04/92	7.6	7	9.8	264
1ABRB002.15	04/07/92	10.6	8.1	11.1	251
1ABRB002.15	05/06/92	15	7.6	7.9	253
1ABRB002.15	06/03/92	18.2	7.3	6.8	205
1ABRB002.15	07/15/92	26.7	7	4.9	310
1ABRB002.15	08/05/92	22	6.6	6.1	194
1ABRB002.15	09/02/92	20.7	7.2	6.3	313
1ABRB002.15	10/21/92	9.8	7.2	6.8	263
1ABRB002.15	11/18/92	6.7	7.3	10.6	228
1ABRB002.15	12/02/92	5.1	7	10.6	250
1ABRB002.15	01/12/93	4.1	6.5	11.4	202
1ABRB002.15	03/03/93	5.3	6.5	10.9	279
1ABRB002.15	04/07/93	8.6	6.9	10.3	187
1ABRB002.15	05/06/93	19.4	6.6	7.8	214

1ABRB002.15	06/09/93	22.1	6.5	7.2	275
1ABRB002.15	07/07/93	27	7	5.5	298
1ABRB002.15	08/04/93	23	6.5	6.1	135
1ABRB002.15	09/22/93	18.4	7.7	7.4	177
1ABRB002.15	09/22/93	18.4	7.7	7.4	177
1ABRB002.15	10/06/93	13.1	7	7.4	284
1ABRB002.15	10/22/93				
1ABRB002.15	11/09/93	6.5	7.8	10.3	342
1ABRB002.15	01/26/94	1.3	7.7	12.5	269
1ABRB002.15	02/02/94	0.8	8	12.3	239
1ABRB002.15	03/22/94	6.7	7.2	12	202
1ABRB002.15	04/13/94	14.2	6.7	9	250
1ABRB002.15	05/18/94	15.1	6.9	7.1	286
1ABRB002.15	06/08/94	23.5	7	6.6	336
1ABRB002.15	07/06/94	25.3	6.9	5.6	252
1ABRB002.15	09/07/94	18.8	7.6	7.7	332
1ABRB002.15	10/18/94	11	7.4	8.1	360
1ABRB002.15	11/09/94	11.9	7.4	7.5	378
1ABRB002.15	12/07/94	10.3	7.4	8.5	257
1ABRB002.15	01/04/95	1.9	7.9	12.5	347
1ABRB002.15	02/01/95	2	7.8	12.1	281
1ABRB002.15	03/01/95	5.2	7.6	10.2	273
1ABRB002.15	04/04/95	11	7.2	10.9	349
1ABRB002.15	05/03/95	12.6	7.5	8.6	316
1ABRB002.15	06/14/95	19.4	7.4	7	282
1ABRB002.15	07/12/95	22.4	7	6.2	165
1ABRB002.15	08/02/95	26.4	7.8	5.4	363
1ABRB002.15	09/13/95	20.3	7	6.4	441
1ABRB002.15	12/07/95	4.8	7.4	10.6	282
1ABRB002.15	01/17/96	0.6	7.2	12.3	446
1ABRB002.15	02/08/96	0.7	7.5	13.9	312
1ABRB002.15	04/03/96	8.6	7.2	11.9	178
1ABRB002.15	06/05/96	18.9	7.3	7.9	287
1ABRB002.15	07/17/96	24.2	7.1	6.3	259
1ABRB002.15	08/21/96	22.4	6.5	7.6	270
1ABRB002.15	09/12/96	21.9	6.6	7.7	250
1ABRB002.15	11/13/96	4.9	6.9	11.6	205
1ABRB002.15	12/03/96	6.1	7	11.1	133
1ABRB002.15	01/07/97	6.7	7.3	10.7	285
1ABRB002.15	02/04/97	5.3	7.3	11	296
1ABRB002.15	03/27/97	11.6	7.5	12.8	143
1ABRB002.15	05/06/97	16.6	7.3		314
1ABRB002.15	06/05/97	16.7	6.9	8	308
1ABRB002.15	07/08/97	23.9	7.1	7	381
1ABRB002.15	08/06/97	22.2	7.4	6.1	435
1ABRB002.15	09/03/97	22.4	7.1	8.4	193
1ABRB002.15	10/07/97	17.4	7.3	7.4	350
1ABRB002.15	11/13/97	7.4	7.1	10.9	260
1ABRB002.15	02/03/98	4.5	6.5	12.7	218
1ABRB002.15	03/03/98	7.2	6.7	10.3	190
1ABRB002.15	04/01/98	19.5	7.4	8.5	239
1ABRB002.15	11/09/98	6.9	7.4	7.5	408

1ABRB002.15	12/15/98	4.7	7.6	12	334
1ABRB002.15	02/02/99	5	7	12.2	341.0
1ABRB002.15	03/09/99	2.8	7.7	12.9	342.4
1ABRB002.15	04/06/99	14.4	7.3	8.7	397.3
1ABRB002.15	05/05/99	19.1	7.2	8.8	335.7
1ABRB002.15	06/15/99	23.2	7.6	5.5	386.2
1ABRB002.15	07/15/99	21.8	7.2	5.6	394.7
1ABRB002.15	08/10/99	23.1	7.6	6.3	423.4
1ABRB002.15	09/08/99				
1ABRB002.15	11/29/99	9.2	6.8	10.4	141.4
1ABRB002.15	12/29/99	3.4	6.4	12.4	342.2
1ABRB002.15	03/01/00	14		11.6	385.8
1ABRB002.15	04/04/00	15.25		8.69	54.9
1ABRB002.15	05/02/00	18.6		10.5	75.3
1ABRB002.15	06/05/00	18	7.5	5.8	397.0
1ABRB002.15	07/10/00	24.42	7.65	7.74	235.1
1ABRB002.15	08/01/00	26.5	7.43	6.62	233.3
1ABRB002.15	09/07/00	19.22	7.32	5.07	270.7
1ABRB002.15	10/10/00	11.48	7.47	4.65	269.0
1ABRB002.15	11/01/00				
1ABRB002.15	12/11/00				
1ABRB002.15	01/23/01				
1ABRB002.15	02/06/01				
1ABRB002.15	04/03/01	9.06	7.2	11.79	287.4
1ABRB002.15	05/01/01	18.29	7.58	8.97	400.3
1ABRB002.15	06/06/01	21.26	7.44	7.54	305.6
1ABRB002.15	03/05/03	3.89	8.12	12.03	566.2
1ABRB002.15	04/14/03	15.81	7.55	8.16	305.4
1ABRB002.15	06/23/03	18.8	7.35	8.08	246.2
		23.38	7.9	90th percentile temp and pH	

2/23/2010 6:37:30 AM

Facility = Broad Run WRF
Chemical = di-2-ethylhexyl phthalate
Chronic averaging period = 4
WLAa = 25
WLAc = 46
Q.L. = 10
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 54
Variance = 1049.76
C.V. = 0.6
97th percentile daily values = 131.404
97th percentile 4 day average = 89.8446
97th percentile 30 day average= 65.1268
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 25
Average Weekly limit = 25
Average Monthly LImit = 25

The data are:

54

2/23/2010 6:41:15 AM

Facility = Broad Run WRF
Chemical = copper
Chronic averaging period = 4
WLAa = 19
WLAc = 12
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 11
Variance = 43.56
C.V. = 0.6
97th percentile daily values = 26.7675
97th percentile 4 day average = 18.3016
97th percentile 30 day average= 13.2665
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 17.5508974086388
Average Weekly limit = 17.5508974086388
Average Monthly LImit = 17.5508974086388

The data are:

11

2/23/2010 6:38:30 AM

Facility = Broad Run WRF
Chemical = zinc
Chronic averaging period = 4
WLAa = 160
WLAc = 160
Q.L. = 10
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 77
Variance = 2134.44
C.V. = 0.6
97th percentile daily values = 187.373
97th percentile 4 day average = 128.111
97th percentile 30 day average= 92.8660
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 160
Average Weekly limit = 160
Average Monthly LImit = 160

The data are:

77

2/23/2010 6:39:15 AM

Facility = Broad Run WRF
Chemical = nickel
Chronic averaging period = 4
WLAa = 250
WLAc = 28
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 6.4
Variance = 14.7456
C.V. = 0.6
97th percentile daily values = 15.5738
97th percentile 4 day average = 10.6482
97th percentile 30 day average= 7.71874
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

6.4

2/23/2010 6:39:51 AM

Facility = Broad Run WRF
Chemical = manganese
Chronic averaging period = 4
WLAa = 64
WLAc = 64
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 11
Variance = 43.56
C.V. = 0.6
97th percentile daily values = 26.7675
97th percentile 4 day average = 18.3016
97th percentile 30 day average= 13.2665
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

11

2/23/2010 6:40:40 AM

Facility = Broad Run WRF
Chemical = lead
Chronic averaging period = 4
WLAa = 19
WLAc = 19
Q.L. = 2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 3.6
Variance = 4.6656
C.V. = 0.6
97th percentile daily values = 8.76030
97th percentile 4 day average = 5.98964
97th percentile 30 day average= 4.34179
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

3.6

M E M O R A N D U M

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22193** **(703) 583-3800**

SUBJECT:	TOXICS MANAGEMENT PROGRAM DATA REVIEW Broad Run Water Reclamation Facility VA0091383
REVIEWER:	Douglas Frasier
DATE:	11 August 2009
COPIES:	TMP file

PREVIOUS REVIEW: 2 July 2009

DATA REVIEWED:

This review covers the fourth quarterly chronic toxicity tests conducted in July 2009 for Outfall 001. The tests were performed on *C. dubia* and *P. promelas* using 24-hour composite samples of final effluent collected from the outfall.

DISCUSSION:

The results of these toxicity tests are summarized in Table 1.

The chronic toxicity of the effluent samples was determined with a 3-brood static daily renewal survival and reproduction chronic test using *C. dubia* as the test species and a 7-day daily renewal larval survival and growth test using *P. promelas* as the test species.

The chronic tests for *C. dubia* yielded a NOEC of < 6.5% effluent; thus, failing the endpoint as stated in the permit. The chronic tests for *P. promelas* yielded a NOEC of 100% effluent; passing the chronic endpoint as stated in the permit: NOEC of 100%, equivalent to a TU_c of 1.0.

CONCLUSION:

The permittee called to discuss the results on 24 July 2009. The facility will retest, only using the species *C. dubia* and will submit results upon receipt.

FACILITY INFORMATION

FACILITY: Broad Run Water Reclamation Facility

LOCATION: 21254 Loudoun County Parkway
Ashburn, VA 20147

VPDES#: VA0091383

TYPE OF FACILITY: Municipal, major

REGION/PERMIT WRITER: NRO / Alison Thompson

PERMIT EFFECTIVE DATE: 1 April 2005

SIC CODE/DESCRIPTION: 4952 / Sewage treatment

TREATMENT: The treatment facility consists of preliminary and primary treatment, five-stage Membrane Bioreactor (MBR) for nutrient removal, granular activated carbon (GAC) treatment, UV disinfection and post aeration.

OUTFALL/FLOW (MGD): Outfall 001 / 5.0 MGD (Flow tiers of 10 & 20 MGD)

RECEIVING STREAM/7Q10/IWC: Broad Run; Potomac River basin & subbasin; Section 8; Class III; Special Standards PWS
7Q10: 0.40 MGD; IWC: 100%

TMP EFFECTIVE DATE: 1 April 2005

TMP REQUIREMENTS: Four (4) Quarterly chronic toxicity tests on 24-hour flow-proportioned composite samples of final effluent from Outfall 001 starting within 6 months of commencement of discharge, followed by three (3) annual. The chronic tests shall be static renewal, survival and reproduction/growth tests using *C. dubia* and *P. promelas*.

Chronic NOEC endpoint = 100% effluent; 1 TU_c

BIOLOGICAL TESTING PERFORMED BY: Coastal Bioanalysts, Inc.

BIOMONITORING RESULTS
Broad Run Water Reclamation Facility (VA0091383)

Table 1
Summary of Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	48-h LC_{50} (%)	IC_{25} (%)	NOEC (%)	% SURV	TU_c	LAB	REMARKS
10/14/08	Chronic *C. dubia*	>100	>100	100 SR	100	1	CBI	1st quarter
10/14/08	Chronic *P. promelas*	>100	>100	100 SG	100	1	CBI	
01/27/09	Chronic *C. dubia*	>100	>100	100 SR	100	1	CBI	2nd quarter
01/27/09	Chronic *P. promelas*	>100	>100	100 SG	100	1	CBI	
01/27/09	Chronic *C. dubia*	>100	>100	100 SR	100	1	CBI	3rd quarter
01/27/09	Chronic *P. promelas*	>100	>100	100 SG	100	1	CBI	
07/02/09	Chronic *C. dubia*	>100	2.2	100 S **6.5 R**	100	**> 15**	CBI	4th quarter
07/02/09	Chronic *P. promelas*	>100	>100	100 SG	100	1	CBI	

FOOTNOTES:

A **boldfaced** LC50 or NOEC value indicates that the test failed the toxicity criterion.

ABBREVIATIONS:

S - Survival; R - Reproduction; G - Growth
% SURV - Percent survival in 100% effluent
CBI - Coastal Bioanalysts, Inc

This document gives pertinent information concerning the reclamation and reuse for the effluent of Broad Run WRF for cooling water, landscape irrigation, fire protection, toilet flushing and non-potable wastewater treatment plant operations. Part III of this permit implements the standards, monitoring and technical requirements of the Water Reclamation and Reuse Regulation (9VAC25-740-10 et seq).

1.	Facility Producing the effluent for Reuse:	Broad Run WRF	SIC Code :	4952 WWTP
	Facility Location:	44865 Loudoun Water Way Ashburn, VA 20147	County:	Loudoun
	Reuse Project Contact Name:	Liz Sitter	Telephone Number:	571-291-7991
2.	Permit No.:	VA0091383		
3.	Owner Name:	Loudoun Water		
	Owner Contact/Title:	Tom Broderick, BRWRF Program Manager	Telephone Number:	571-291-7825

Reclaimed Water Standards and Monitoring Summary.

The reclaimed water standards are presented in the following table; the basis for the standards is 9VAC25-740 for Level 1 reclaimed water. Standards are established for *E. coli*, Turbidity, pH, BOD, COD, and Total Residual Chlorine. Monitoring is included for Total Nitrogen, Total Phosphorus, Reclamation System Flow, and Influent Flow.

A standard was established for COD in lieu of BOD; 9VAC25-740-70 requires that Level 1 reclaimed water meet a BOD monthly average of $\leq$ 10 mg/L. The Broad Run WRF is also subject to the effluent limits established by the Dulles Policy. 9VAC25-400 of the State Water Control Law was established to regulate the discharge from sewage treatment plants in the Dulles Area Watershed, which is located upstream of several major public water supply intakes serving the Washington, D.C. metropolitan area. This Policy prescribes the effluent limitations for the sewage treatment works, the design requirements for the sewage treatment plants and pumping stations, and the requirement for an instream monitoring program. The Broad Run WRF has a COD limit of 10.0 mg/L as prescribed in 9VAC25-400-30B. With the stringent COD limit of 10 mg/L, it is staff's best professional judgment that there is no chance for detectable BOD values. BOD methodology in Standard Methods 18th edition allows for the lowest quantification level for BOD of at best 2 mg/L.

Subdivision 9VAC25-740-80.A.3 states that "Sampling for TSS and BOD_5 or $CBOD_5$ shall be at least weekly or more frequently based on the design flow of the reclamation system, and shall be the same sampling type and frequency specified for sewage treatment works in the Sewage Collection and Treatment Regulations (9VAC25-790)." Subdivision 9VAC25-790-960.A (Sampling test and frequency) of the SCAT Regulations states that "Table C lists the typical recommended minimum sampling program schedules for all sewage treatment works". Therefore, other sampling program schedules, including other effluent monitoring parameters not shown in Table C, may be considered. In addition, subdivision 9VAC25-790-960.B indicates that effluent testing and frequency "of other sampling for a treatment works will be provided in the VPDES permit or the VPA permit." For the Broad Run WRF, the use of a COD effluent limit in lieu of a BOD effluent limit represents "other sampling for a treatment works" provided in the VPDES permit for this facility.

The water for reuse and reclamation is pulled from the permeate storage tanks which are prior to the carbon filters, so the COD concentrations are higher than those found in the final effluent. COD in these tanks has averaged 15 mg/L in the 18 month history of the plant's operation. High values have been seen in the mid-20 mg/L range. As such, staff proposes a monthly average standard of $\leq$ 50 for this administrative authorization since there is a limited history for the plant's performance. To demonstrate that the BOD standard is met, staff proposes a monthly BOD sample frequency. During the 2010 reissuance of the VPDES permit, staff will re-evaluate the COD standard and revise it if necessary.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual and the Water Reclamation and Reuse Regulation.

Part III. A. Standards and Monitoring Requirements

1. Outfall 650 -Level 1 for Cooling Towers, Chilling Water, Non-residential Fire Protection, Landscape Irrigation, Non-residential Toilet Flushing, WWTP Non-potable water

a. During the period beginning with the issuance of a Certificate to Operate (CTO) for the reclamation system and ending with the permit expiration date, the permittee is required to monitor pollutants in the reclaimed water as described below for reuses specified in the Reclaimed Water Management Plan:

Parameters	Standard [1]	Units	Frequency	Sample Type
E. coli [2]	Geometric mean [3]: ≤ 11	colonies/100 ml	5D/W[4]	Grab
	CAT: 35	colonies/100 ml	NA	Grab
Total Residual Chlorine (TRC) [5]	NL	mg/l	Continuous	Recorded
	CAT: < 1.0	mg/l	Continuous	Recorded
pH	6.0 – 9.0	Standard Units	1/Day	Grab
BOD_5	≤ 10	mg/l	1/Month	Grab
COD	Monthly average: ≤ 50	mg/l	1/Day	Grab
Turbidity [6]	Daily average [7]: ≤ 2	NTU	Continuous	Recorded
	CAT: > 5	NTU	Continuous	Recorded
Reclamation System Flow [8]	Monthly average: NL	MGD	Continuous	TIRE
	Monthly maximum: NL	MGD	Continuous	TIRE
Influent Flow [9]	Monthly average: NL	MGD	Continuous	TIRE[10]
	Monthly maximum: NL	MGD	Continuous	TIRE[10]
Total Nitrogen [11]	NL	mg/l	1/Day	24 HC
Total Phosphorus [11]	NL	mg/l	1/Day	24 HC

NA = Not Applicable MGD = Million gallons per day TIRE = Totalizing, indicating, and recording equipment
CAT = Corrective action threshold NL = No Limit NTU = nephelometric turbidity unit

(1) With the exception of turbidity, standards must be met at the point of compliance (POC) designated as internal outfall 650. The POC shall be just upstream of disinfection for turbidity, at the end of the contact tank or contact period for total residual chlorine, and as specified in the approved operations and maintenance manual of the reclamation system for all other standards.
(2) After disinfection.
(3) For the purpose of calculating the geometric mean, bacterial analytical results below the detection level of the analytical method used shall be reported as values equal to the detection level.
(4) For reclamation systems treating municipal wastewater, bacterial samples shall be collected between 10:00 a.m. and 4:00 p.m. to coincide with peak flows to the reclamation system
(5) The TRC standard applies only if chlorine is used for disinfection. TRC is measured after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow.
(6) Turbidity analysis shall be performed by a continuous, on-line turbidity meter equipped with an automated data logging or recording device and an alarm to notify the operator when the CAT for turbidity in the standard for Level 1 has been reached. Compliance with the average turbidity standard shall be determined daily, based on the arithmetic mean of hourly or more frequent discrete measurements recorded during a 24-hour period. See Part III.B.8 for additional information regarding turbidity monitoring.
(7) Daily average is the arithmetic mean of hourly or more frequent discrete turbidity measurements recorded during a 24-hour period.
(8) The designated design capacity for the reclamation system is 11MGD.
(9) The design capacity of the wastewater treatment works that will divert source water or effluent to the reclamation system is 11 MGD.
(10) Influent flow shall be monitored at the head of the wastewater treatment works that will divert source water or effluent to the reclamation system/calculated as the sum of all authorized discharges to surface waters, land treatment and to reclaimed water distributions systems for reuse or directly to a reuse.
(11) There shall be no nutrient management requirements for irrigation reuse of the reclaimed water produced by the reclamation system based on an annual average concentration of total nitrogen (N) and total phosphorus (P) ≤ 8.0 and ≤ 1.0 mg/l, respectively. Annual average concentrations of total N and total P shall be the arithmetic mean of the monthly average concentrations of these nutrients for the most recent 12 consecutive months of monitoring.

Part III.B. Reuse and Reclamation Special Conditions

1. Prohibitions for Reuse and Reclamation. The Reuse and Reclamation Regulation at 9VAC25-740-50.B outlines prohibited uses for reuse and reclamation, including direct potable reuse, filling swimming pools.

2. Nuisance Conditions. The Reuse and Reclamation Regulation at 9VAC25-740-170.D prohibits nuisance conditions resulting from the distribution, use or storage of reclaimed water.

3. Reclamation and Reuse Reopener. It is staff's best professional judgment that the permit contain this reopener that would allow the Board to modify or revoke and reissue this permit if any applicable standards or requirements for water reclamation and reuse promulgated under the Water Reclamation and Reuse Regulation (9VAC25-740) are more stringent than or are in addition to any standards or requirements for water reclamation and reuse contained in this permit.

4. Submittal of Monitoring Reports. The Reuse and Reclamation Regulation at 9VAC25-740-80.C states that "A reclamation system that produces reclaimed water intermittently or seasonally shall monitor only when the reclamation system discharges to a reclaimed water distribution system, a non-system storage facility, or directly to a reuse." Reports shall be submitted no later than 10 days following the end of the monitoring period.

5. Corrective Action Threshold. The Reuse and Reclamation Regulation at 9VAC25-740-70.C.1 requires corrective action when the reclaimed water reaches the corrective action threshold (CAT) for turbidity or Total Residual Chlorine specified in Part III.A. of the permit. This special condition also provides instructions for actions to be taken for resampling and diversion of the reclaimed water.

6. Corrective Action Threshold for Bacteria. The Reuse and Reclamation Regulation at 9VAC25-740-70.C.2 describes the actions to be taken when the reclaimed water reaches the CAT for bacteria.

7. Failure to Resample. The Reuse and Reclamation Regulation at 9VAC25-740-70.C.3 states that failure to resample after determination that monitoring results are not in compliance with the CAT standards for reclaimed water in Part III.A, or to divert or discharge substandard or reject water in accordance with Part III.B.5 shall be deemed a violation of this permit.

8. Online Turbidity Meter. The Reuse and Reclamation Regulation at 9VAC25-740-80.A.1 states that should the on-line turbidity meter for the reclamation system go out of service for either planned or unplanned repair, samples shall be manually collected for turbidity analysis at four-hour intervals up to a maximum of five days. Following the five-day period of repair, continuous, on-line monitoring with a turbidity meter shall resume.

9. Operations & Maintenance Manual. The Reuse and Reclamation Regulation at 9VAC25-740-120.B.3.f, 9VAC25-740-140.A, and 9VAC25-740-140.D.1 and F, "Ultraviolet Disinfection: Guidelines for Drinking Water and Water Reuse, 2nd Ed." (NWRI, 2003) state that within 90 days of placing the new reclamation system into operation, the permittee shall submit a new or revised operations and maintenance manual for the system to the DEQ-NRO. This special condition outlines the required sections of the O&M Manual. This special condition also outlines the requirements for an O&M Manual for the reclaimed water distribution system as required by items a through e at 9VAC25-740-140.B, D.2 and F; item f – 9VAC25-740-110.B.9.

10. 95% Capacity Reopener. The Reuse and Reclamation Regulation at 9VAC25-740-180 states that when the monthly average flow into the reclamation system reaches 95% of the designated design capacity authorized by this permit for each month of any 3 consecutive month period, a written notice and a plan of action for ensuring continued compliance with the terms of this permit shall be submitted to the DEQ-NRO.

11. BNR Reopener. It is staff's best professional judgment that when the annual average concentration of total nitrogen (N) or total phosphorus (P) in the reclaimed water exceeds 8.0 mg/l or 1.0 mg/l, respectively, for the preceding calendar year (January through December), a written notice of such nutrient reduction failure and a plan of action for ensuring the reclamation system achieves BNR treatment of the reclaimed water shall be submitted by the permittee to the DEQ-NRO for review and approval. This condition, although not specifically stated in law or regulation, is intended to address those situations where the permittee's reclamation system or satellite reclamation system is unable to produce BNR reclaimed water as indicated in their permit application, and the additional nutrients in the non-BNR reclaimed water are consequently unmanaged for irrigation reuses. The permittee has the option to correct treatment of the reclaimed water to achieve BNR or in the absence of any action, face possible enforcement action that may ultimately result in a staff initiated modification of the permit to add nutrient management requirements for irrigation reuse of the non-BNR reclaimed water.

12. Minimizing Losses. The Reuse and Reclamation Regulation at 9VAC25-740-110.B.9 and 9VAC25-740-100.C.1.a

requires that the reclaimed water distribution system shall be maintained to minimize losses and to ensure safe and reliable conveyance of reclaimed water, such that the reclaimed water in the distribution system will not be degraded to a quality that violates the standards in this permit for the intended reuses of the reclaimed water specified in the approved Reclaimed Water Management (RWM) Plan.

13. Storage of Reject Water. The Reuse and Reclamation Regulation at 9VAC25-740-110 C.14 requires all storage facilities of reject water and reclaimed water (system and non-system), including landscape impoundments used for non-system storage of reclaimed water, shall be designed and operated to prevent a discharge to surface waters of the state except in the event of a storm greater than the 25-year 24-hour storm.

14. Freeboard. The Reuse and Reclamation Regulation at 9VAC25-740-110 C.14; 9VAC25-32-80.I.5 and 6; 9VAC25-31-190.L.5 through 7 requires the permittee to maintain a minimum freeboard of two feet at all times in the reject water and system storage facility.

15. Storage Inventory. The Reuse and Reclamation Regulation at 9VAC25-740-110 C.15 requires the permittee to maintain a current inventory of reject water storage, system storage and non-system storage facilities located within the service area of the approved RWM plan shall be maintained.

16. Preliminary engineering report. The Reuse and Reclamation Regulation at 9VAC25-740-120.A that a preliminary engineering report shall be submitted for new reclamation system, satellite reclamation system or reclaimed water distribution system; or for the modification or expansion of the same facilities where they already exist. At the request of the permittee, the DEQ-NRO may waive the need for a preliminary engineering report or portions of a preliminary engineering report.

17. CTC/CTO. The Reuse and Reclamation Regulation at 9VAC25-740-120.B.1 requires that the permittee shall not cause or allow the construction, expansion or modification, and the operation of the reclamation system except in compliance with a certificate to construct (CTC) and a certificate to operate (CTO), respectively, issued by the DEQ.

18. Public Access. The Reuse and Reclamation Regulation at 9VAC25-740-160.A states that there shall be no uncontrolled public access to the reclamation system.

19. Advisory Signs. The Reuse and Reclamation Regulation at 9VAC25-740-160.B and D requires advisory signs for all reuses of reclaimed water treated to Level 1.

20. Placement of Advisory Signs. The Reuse and Reclamation Regulation at 9VAC25-740-160.E states that advisory signs shall be posted adjacent to impoundments or ponds, including landscape impoundments, used for non-system storage of reclaimed water.

21. Advisory Signs for Industrial Sites. The Reuse and Reclamation Regulation at 9VAC25-740-160.F requires that advisory signs shall be posted around those areas of the industrial site where reclaimed water is used and at the main entrances to the industrial site to notify employees and the visiting public of the reclaimed water reuse. Access control beyond what is normally provided by the industry is not required.

22. Supplemental Irrigation and Salt Accumulation. The Reuse and Reclamation Regulation at 9VAC25-740-10 and 9VAC25-740-100.C.2 requires that all irrigation reuses of reclaimed water shall be supplemental irrigation, which in combination with rainfall, meets but does not exceed the water necessary to maximize production or optimize growth of the irrigated vegetation. This special condition also limits salt accumulation from supplemental irrigation.

23. Irrigation Requirements. The Reuse and Reclamation Regulation at 9VAC25-740-170.E requires the minimization for human contact, no application when the ground is saturated or frozen, or contact with drinking water fountains and coolers.

24. Overspray from Irrigation. The Reuse and Reclamation Regulation at 9VAC25-740-170.G prohibits overspray of surface waters, including wetlands, from irrigation or other reuses of reclaimed water.

25. Irrigation Setbacks. The Reuse and Reclamation Regulation at 9VAC25-740-170.H.1 and 2 requires minimum setbacks from potable water supply wells, non-potable wells, limestone outcrops, and sinkholes.

26. Irrigation Setback Waivers. The Reuse and Reclamation Regulation at 9VAC25-740-170.H.4 allows for a reduction of setback distances if the permittee receives approval from DEQ and meets the requirements of this special condition.

27. Multiple Setbacks. The Reuse and Reclamation Regulation at 9VAC25-740-170.H.5 requires that for irrigation reuses where more than one setback distance may apply, the greater setback distance shall govern.

28. Measurement of Setbacks. The Reuse and Reclamation Regulation at 9VAC25-740-170.H.6 requires all setback distances shall be measured horizontally.

29. Cooling Tower Spray. The Reuse and Reclamation Regulation at 9VAC25-740-90.A, footnote h, states that the windblown spray generated by once-through cooling or recirculating cooling towers shall not reach areas accessible to workers or the public unless Level 1 disinfection specified in 9VAC25-740 is provided.

30. Worker Contact. The Reuse and Reclamation Regulation at 9VAC25-740-90.A, footnote e states that worker contact shall be minimized.

31. Reclaimed Water Failure. The Reuse and Reclamation Regulation at 9VAC25-740-100.C.1.f, 9VAC25-740-170.A.2 and 9VAC25-740-200.B have specific requirements where treatment of the reclaimed water fails more than once during a seven-day period to comply with Level 1 disinfection.

32. New End Users. The Reuse and Reclamation Regulation at 9VAC25-740-100.C.8For the addition of new end users not contained in the original reclaimed water management (RWM) plan submitted with the application for a permit, the permittee shall submit to the DEQ-NRO an amendment to the RWM plan identifying new end users not less than 30 days prior to connection and reclaimed water service to these users. For each new end user, the permittee shall also provide all applicable information required by the Water Reclamation and Reuse Application Addendum.

33. Interruption of Reclaimed Water Supply. The Reuse and Reclamation Regulation at 9VAC25-740-200.B requires the interruption or loss of reclaimed water supply to be reported. It is staff's best professional judgment that specific information listed in the special condition is to be reported for such an occurrence.

34. Recordkeeping. The Reuse and Reclamation Regulation at 9VAC25-740-190.A and B requires recordkeeping specifically for the water reclamation system operation. This special condition specifies what is required in the records.

35. Annual Water Reclamation and Reuse Report. The Reuse and Reclamation Regulation at 9VAC25-740-200.C requires the permittee to submit an annual report for the reclaimed water distribution system covering a 12-month period from January 1 through December 31 to the DEQ-NRO on or before February 10 of the following year. This special condition includes the annual report requirements.

36. Determining Supplemental Irrigation Rates. The Reuse and Reclamation Regulation at 9VAC25-740-10 and 9VAC25-740-100.C.2 requires that all irrigation reuses of reclaimed water shall be supplemental irrigation, which in combination with rainfall, meets but does not exceed the water necessary to maximize production or optimize growth of the irrigated vegetation. This special condition requires the permittee to submit the method for calculating supplemental irrigation rates prior to initiating supplemental irrigation.

37. Notification of Fairfax Water. This special condition requires the permittee to have procedures in place to notify Fairfax Water of any release from the reclaimed water distribution system. This is based on staff's best professional judgment and the Virginia Department of Health recommendation because of the proximity of the intake for the water system.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Loudoun, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2010 to 5:00 p.m. on XXX, 2010

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Loudoun Water, 44961 Loudoun Water Way Ashburn, VA 20146 VA0091383

NAME AND ADDRESS OF FACILITY: Broad Run WRF, 44961 Loudoun Water Way, Ashburn, VA 20146

PROJECT DESCRIPTION: NAME OF APPLICANT has applied for a reissuance of a permit for the public Broad Run Water Reclamation Facility. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 11 million gallons per day into a water body with future expansion to 22 million gallons per day. Sludge from the treatment process will be land applied by an approved contractor. The facility proposes to release the treated sewage in the Broad Run in Loudoun County in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: Chemical Oxygen Demand, Total Suspended Solids, Total Kjeldahl Nitrogen, Dissolved Oxygen, pH, Total Nitrogen, Total Phosphorus, and E coli. Monitoring is included for Dissolved Copper, Dissolved Zinc, Endosulfan, Total Hardness, and Toxicity.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Broad Run Water Reclamation Facility
NPDES Permit Number:	VA0091383
Permit Writer Name:	Alison Thompson
Date:	2/16/2010

Major [X] **Minor** [ ] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations? No modeling done – Dulles Policy effluent limits		X	
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	**Yes**	**No**	**N/A**
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?	X		

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

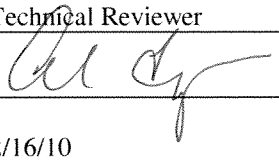
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
Duty to mitigate	Monitoring and records	Transfers
Proper O & M	Signatory requirement	Monitoring reports
Permit actions	Bypass	Compliance schedules
	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Alison Thompson
Title	Technical Reviewer
Signature	
Date	2/16/10